

DENNIS PULESTON, called as a witness in behalf of the PLAINTIFFS, being
duly sworn, testified as follows: * * * (708)

THE WITNESS: Dennis Puleston * * *
Meadow Lane, Brookhaven, New York, 11719

DIRECT EXAMINATION by MR. YANNACONE:

Q. Mr. Puleston, by whom are you employed?

A. Brookhaven National Laboratory. * * *

I am head of the information division, which includes both the
technical and public affairs of the laboratory.

Q. And are you familiar of your own knowledge with the wildlife and
natural resources of the County of Suffolk?

A. To a fair extent, yes.

Q. How many years have you been observing them?

A. I established residence in Brookhaven in 1939 and, except for (709)
the war years, I have studied wildlife in Brookhaven and Suffolk County in gen-
eral on a continuing basis. In fact, I would say that almost every morning I
am out in the immediate area of my home in South Brookhaven.

Q. And the area about your home in the hamlet of Brookhaven is still
relatively the same as it was ten years ago, isn't it?

A. Relatively the same, yes.

Q. And it borders the Great South Bay, doesn't it?

A. It does. It is about half a mile of salt marsh beyond an area of
deciduous woodlands and open fields with a few fresh water or brackish water swamps.

Q. Now, are you familiar with the, I think it was, Audubon-count method
that was referred to by counsel this morning?

A. I am.

* * *

Q. Are you familiar with the methods used by the Audubon Society to
count birds? * * * (710)

A. Yes.

Q. Can you tell us what the methods are?

A. Well, there is one, the most well-known and the well-publicized
method is what is known as the annual Audubon Christmas count which is a nation-
wide census or count made during the Christmas season, begun in 1900. It is
done on an annual basis. One reason for it being conducted at this particular
season is because bird populations at that time are at their most stable point and
given a period generally around December the 21st and January the 2nd or 3rd (711)
each group conducts a census in a specific area and can select any one 24-hour
period to conduct the count. Now, each area is a circle with a 15-mile diameter.
In other words, it has a seven-and-a-half-mile radius.

Now, since this annual count began in 1900, it has grown tremendously.
It is now participated in by thousands of people all over the country. It is very
useful in the sense that it does indicate population trends, extensions of range,
decreases and increases in population. At the same time it does have its limi-
tations in that due to the fact it is growing so rapidly by the number of participants,
one also gets a somewhat misleading figure because every year more and more
birds get counted.

Now, the count itself consists of not only counting the number of species
but the number of individuals of each species. If an area is covered every year
by approximately the same size group, preferably the same people covering (712)
the same areas within one of those 15-mile circles, one does get a fair amount
of scientific value out of it. However, to many people it is regarded as a kind
of an annual sporting event, if you can call this count such. In ornithological

circles there is a great deal of competition between the various areas to obtain a higher count species-wise as possible. Obviously, the people counting in the southern states get many more species in their counts than people up north.

Q. Are there any other methods currently employed by the Audubon Society for counting purposes?

A. Yes, there is another one known as the breeding-bird census, which is conducted in a number of specific ecosystems where one actually goes in during the breeding season. In other words, when the birds are nesting in an area of fairly discreet type of ecosystem, and one endeavors to obtain as accurate a count as possible of the nesting pairs in that area. This gives very valuable scientific information not only on the species themselves but their relationships to one another and to the vegetation and the general ecosystem within that area. (713)

* * *

Q. All right. You heard Dr. Wurster testify in cross-examination this morning as to a method he used to determine bird population in his studies in Hanover and Norwich. Do you feel they would produce a fair and accurate representative count of the general bird population in the area?

A. Yes.

Q. Have you participated in the Audubon Christmas count?

A. Yes. * * *

For fifteen years.

Q. Have you participated in any of the nesting censuses? (714)

A. Not one of the official breeding-bird censuses. There is not one being done in this particular area.

THE COURT: Is this work done by amateurs or by professionals?

THE WITNESS: Both. I might mention, sir, that in this particular census, if you can call it such, the amateurs far outweigh the professionals.

THE COURT: In number or ability?

THE WITNESS: In number and probably in ability in their field work, because the professionals are so tied up with the museum work, the taxonomy, and so forth. They can't do all the field work, so they do obtain a very large amount of amateurs. In fact, most of the public literature on censuses and bird counts and bird populations is supported by amateurs.

MR. YANNACONE: I have no further questions, Your Honor.

CROSS-EXAMINATION by MR. CORWIN: (715)

Q. Are you differentiating between an amateur and professional in knowledgeable qualifications or whether or not they are being paid for the work they do.

A. More from a point of whether they are being paid for it, I would say.

Q. So that actually these amateurs that you are talking about are really the professionals in the field, aren't they, in the sense of knowledgeableness?

A. It depends upon what you mean by knowledgeability. Most of the amateurs are probably better at identification of birds by species in the field than the professional. Now, when it comes to detailed taxonomy and the determination of species and subspecies, obviously the professional has it all over the amateur. But as far as actual field work is concerned, binocular work, if you wish, I would feel that the amateurs have had a lot more hours at this on the average than the average professional. (716)

Q. So you heard testimony here, haven't you, sir, that it is not unlikely that all of the birds which you see with or without your binoculars have some DDT in them, is that right? You heard that testimony?

A. I have heard that, yes.

Q. Now, how much they have in them, you can't determine when you are working in the field, can you?

A. No, you cannot, not unless they have had a lethal dose and the tremors.

Q. Well, what about the tremors? Have you seen much evidence of that in your bird watching out in Long Island.

A. I have found quite a few birds with tremors, yes.

Q. You don't know what the tremors are caused by, do you? They are caused by other things than DDT, aren't they?

A. I don't know. I don't know of any other cause for tremors other than DDT.

Q. What about dieldrin? (717)

A. That's possible.

Q. As a matter of fact, if I mentioned any number of toxic substances, you would say it is possible, wouldn't you?

A. Yes. I would say that any toxic substance which affects the nervous system would induce tremors if taken in sufficient amounts.

Q. You submitted an affidavit in this case back on the 14th of June, 1966, isn't that so?

A. Yes.

Q. And among the statements you made in there, there was a reference to the ospreys, and you stated: "At Orient State Park, the former colony of 35 nests has been reduced to one." Is that the statement you made?

A. Yes.

Q. Do you want to tell us something about that statement, when you found the 35 nests, and when you found the one?

A. I didn't find the 35 nests.

Q. Do you know who did? (718)

A. Yes, I do.

Q. Do you know whether or not the man who found the 35 nests at Orient State Park traipsed up and down the breadth and length of the beach and park searching for these nests?

A. I would certainly assume so.

Q. He would have searched quite a considerable amount of time, wouldn't he?

A. Yes.

Q. Do you know how long Orient Beach State Park is?

A. Yes, I do.

Q. How Long?

A. I would estimate it to be about five miles long.

Q. And the average width would be how much?

A. A few hundred yards.

Q. Do you know when this count was made of 35?

A. This was done by Mr. Roy Latham, a local farmer out there, who is a very well-known naturalist.

Q. Do you know when the count of 35 was made? (719)

A. No, I don't, but it was probably in the region of 20 years ago, because he has not been very active recently.

Q. Are you familiar with the changes that have been made in Orient Beach State Park in the last 20 years?

A. Do you mean man-made changes?

Q. Yes.

A. Yes, it has been developed into a park.

Q. A lot more people around today than 20 years ago?

A. Yes, certainly.

Q. And you recognize too that the disappearance of the ospreys is affected by the encroachment of civilization?

A. I think to some extent the encroachment of civilization has been productive of the osprey population. However, if I may enlarge upon that, it seems that certain individual ospreys are practically undisturbed by the presence of people. This is so in the case of the Town of Sag Harbor where--- * * * I mean the village, I am sorry. Where birds nest right in the middle of the settlement there, and in some areas of Shelter Island this is also true. Apparently individual birds become accustomed to the presence of humans and are, therefore, undisturbed by them. (720)

However, in areas such as we have been considering, such as the mouth of the Connecticut River, where up until recent years they have been relatively undisturbed, this would be something different.

Q. Well, come over to Shelter Island with me. Do you know how many nests there are on Shelter Island now?

A. No, I wouldn't venture to say.

Q. Do you know how many there were there two or three years ago?

A. I know that there were many more than there are now, active nests, that is.

Q. Yet if you don't know how many there are now, how do you know how many more there were two or three years ago? (721)

A. Because I have been there. I have never made an accurate count, but I can get an overall impression.

Q. Do you get that from traipsing up and down every mile and road in Shelter Island or are you just talking about the Ramhead area and the beaches to Ramhead?

A. Well, osprey nests are very conspicuous, and it doesn't take a lot of searching through the underbrush to see ospreys' nests.

Q. Some of them are on top of telephone poles, aren't they?

A. Yes.

Q. And others are in the marshes?

A. In Shelter Island, I don't believe that is so.

Q. Well, have you traipsed up and down all the marshes of Shelter Island to make that observation yourself.

A. No.

Q. On the studies made over in the foot of the Connecticut River, all the ospreys were nesting in the salt marshes, weren't they? (722)

A. Yes, sir, mostly in small bushes and trees. I might add that on Gardiner's Island there are two types of osprey nests--ground nests and tree nests. But to my knowledge there have not been ground nests on Shelter Island.

Q. This business about making a bird count depends upon a lot of factors, doesn't it?

A. Yes.

Q. If you were going to count the seagulls alongside of Orient Beach State Park, it would make a great deal of difference whether it was in the morning, when the fishing boats were going out, or whether it was in the afternoon, when they were coming back and the mate was gutting and throwing overboard the viscera? There would be a lot of seagulls around in the latter case, wouldn't there?

A. I do not like to hear that word "seagull" used. We do not accept that ornithologically. If you don't mind, there is no such thing as a seagull.

Q. If you want to call it by its Latin name, that is all right with me.

A. No, there is no need for Latin name. By species, there are a number of species around here. (723)

Q. As a matter of fact, sir, the end of Orient Beach State Park is beyond the point where they say, "Please don't trespass beyond this point", and this area nowadays is regarded as a tern preserve?

A. Yes, there is a small tern colony there.

Q. Relatively small?

A. Yes.

Q. Do you know how many terns there are?

A. No.

Q. Do you know how many nests there are?

A. No, I don't.

Q. There a lot more terns flying around that lighthouse and the end of Orient Beach State Park now than there were ten years ago, aren't there?

A. Probably so, yes.

Q. And that might account for the fact that there aren't as many ospreys around there, might it not? That could be one of the factors, could it not? (724)

A. I don't believe that osprey nests are on the ground in that particular area.

Q. Well, you admitted that you didn't walk around to see whether they were or not, is that right?

A. That's right.

Q. And that is just your belief?

A. Yes. It has always been commonly accepted that about the only place where ospreys nest on the ground is on Bostwick Point and a few other odd nests along the beaches of Gardiner's Island.

Q. Sir, do you have any relationship, do you have any knowledge between the relationship of the amount of DDT used by the Suffolk County Mosquito Control Commission and the populations of any bird species in Suffolk County, any direct relationship? * * *

Sir, do you have any relationship between the amount of DDT (725) used by this defendant and the population of any particular bird species? Can you answer the question, yes, no, or I don't know?

A. No, I wouldn't be prepared to answer that question.

Q. Now, you said the area you lived in had not changed much in the last 20 years. When you said that, are you referring about each species of wildlife?

A. No.

Q. You are not referring about that?

A. No.

Q. In what respects then has it stayed the same and what has changed? * * * How has it changed, and how is it the same? (726)

A. Ecologically it has changed to some extent. Physically it has changed very little.

Q. When you say physically, are you talking about the topography or number of people who live in the area or the number of houses or the relationship between the number of square miles of road and salt marsh or what do you mean?

A. I do mean that, yes. I mean, as far as the changes of population of road, and so on, there has been no change.

Q. Now, you said in answer to a question Mr. Yannacone asked you that you were familiar with the natural life in Suffolk County, particularly in Brookhaven area.

A. Yes.

Q. Do you consider the area that you live in in Brookhaven to be a fair sample of area generally throughout the county? (727)

A. I think it is a fair sample of some of the ecosystems that exist in Suffolk County.

Q. Do you think it is a fair sample of what has happened over the past 30 years, in view of the observation which I am sure you are well aware of that the defendant H. Lee Dennison has made with respect to the recent tremendous growth of Suffolk County?

A. In making such a comparison, I would not take into consideration areas that have been built up and radically changed physically. I would compare the area with which I am most familiar with other areas which have been relatively untouched physically.

Q. If you were making a Christmas count of birds in this area, you wouldn't expect to find many robins, would you?

A. No. In the wintertime there aren't many robins here.

Q. There are some in the woods, aren't there? (728)

A. There are some in the woods, but obviously they don't eat worms in the wintertime, because worms are too far down. They feed more on berries in the wintertime.

Q. Well, are you also familiar with the natural sealife and the number of weakfish?

A. I'm not directly familiar, no.

Q. Crabs?

A. With crabs, yes.

Q. Lobsters?

A. Lobsters, no.

Q. Oysters?

A. Oysters by hearsay.

Q. Now, you state in your affidavit as follows: "The black snake, garter snake, and hog-nosed snake, reptiles fairly common in former times to this area, have essentially disappeared during the last few years. The terrestrial eastern tox tortoise, and the aquatic spotted and painted turtles are much rarer than formerly.

"Butterflies of all species previously common to abundant are now extremely rare; some species have disappeared entirely. (729)

"Your deponent believes that the wildlife population changes cited above, and many other, observed, but not herein detailed, are largely attributable, if not entirely attributable, to the use of DDT and other persistent, broad-spectrum insecticides."

Now, are you implying that the disappearance of the black snake, the garter snake, and the hog-nosed snake is attributable to the use of DDT?

A. Yes, sir, that is my belief.

Q. Have you seen any of the literature indicating that studies have been made which would indicate that that was the case?

MR. YANNACONE: I'm going to object to any further questioning. I didn't ask this witness one question about DDT. He is his witness now, and he is proceeding to cross-examine him. He is bound by the opinion, Your Honor.

THE COURT: Yes, he is bound by it. (730)

MR. CORWIN: I am very well aware of it. * * *

A. Yes.

Q. Can you tell me what they are and where they appear?

A. No, I cannot. These are just general references.

Q. Do you think that the disappearance of the black snake is serious to the welfare of the people of Suffolk County?

A. In an indirect fashion, yes.

Q. Will you explain why?

THE COURT: I think the Court will take judicial notice of the fact that they will grab rodents here and there. All right. Go ahead.

Q. Are you thinking about the esthetic aspects of it?

A. Not esthetic.

Q. Are you thinking about the ecological balance?

A. I am thinking about that and also the fact that they are a beneficial reptile in that they exercise control, as the Court said, in rodents which are harmful to us. (731)

Q. Do you think the blue crab is a beneficial arthropod?

* * *

THE COURT: Now you are getting in my territory. I will take judicial notice that I love blue crabs, and you can't find them here. They are not around in Long Island Sound anyway.

MR. CORWIN: Some people eat rattlesnakes and black snakes, Judge.

THE COURT: I know that, but that doesn't bother me.

Q. Do you agree with the general consensus of the professional conservationists that the greatest numbers of birds are associated with the agricultural lands? * * *

A. Yes. If you are going to include starlings, very definitely. (732)

Q. Would you regard the starling as a pest bird?

THE COURT: Again I will take judicial notice that I have tried to shoot them by the thousands in my corn field, and you can't do it. In fact, they land on my gun barrel, and I'm not kidding you about that. They do. * * * They go through a corn field in one day. So I will take judicial notice of what they do to me. Go ahead.

A. In answer to your question, I do consider the pest bird. It is not part of our natural environment. Forty starlings were introduced into Central Park in 1890, and from that small beginning they have multiplied to the point where they have now extended their population all the way across to the Pacific Coast.

* * *

(733)

Q. Do you feel the same way about the English sparrow?

A. Well, the English sparrow is less of a nuisance now since Mr. Henry Ford introduced the automobile.

Q. He did away with the horse, is that right?

A. Yes, and they used to be a great pest in cities.

Q. Then you feel the same way about the hoof and mouth disease too, I take it. However, sir, do you agree that what one person regards as a pest or a trash fish or something like that, another person might regard as a valuable animal?

A. Certainly, and this depends, of course, on the particular environment. In some cases, if I might add, starlings are definitely beneficial.

Q. (Were you here during all the testimony?)

(734)

A. Not all of it, no, sir.

Q. Didn't you hear one of the plaintiffs' witnesses testify that he thought it extremely important in the ecological balance that nothing be done to disturb or to eliminate even one species?

A. Yes.

Q. Do you concur in that?

A. Yes, I do, unless the effort that is being made by man is to supplement or replace a natural controlling factor which man has already removed.

Q. How do you feel about the red-winged blackbird?

A. I feel that he is definitely becoming a pest and is a pest in some parts of the country due to the fact that man has reduced the number of natural predators that he did have. So they have gotten out of hand.

Q. And do you feel the same way about introduced pests generally?

A. I think it is absolutely criminal to introduce any new species into a new environment, because there is no way of predicting what is going to happen to it. It may explode in a fantastic fashion which will make everyone regret (735) the fact, as is indicated in the case of the starling.

THE COURT: And the red-wing blackbird?

THE WITNESS: Well, the red-wing blackbird is a native bird, sir.

THE COURT: He sits right there with the starling.

THE WITNESS: Yes.

THE COURT: He drives the getaway car.

MR. CORWIN: That was very apt. Your Honor.

Q. Now, you believe in the general theory of evolution, don't you?

A. In the general theory of evolution, I certainly do.

Q. By the way, how long do you say you have been living here in Suffolk County?

A. Since '39. * * * I came here in 1939. (736)

Q. Do you realize that in this evolutionary process species come and go?

A. In natural evolution, yes.

Q. And isn't that the survival of the fittest angle?

A. That is so, but it is a very, very gradual thing, until man starts interfering. This is why during the past 100 years the number of species that have gone extinct far outweighs the number of species that have gone extinct for the last 1000 years.

Q. Well, of course, you really don't know how many went extinct in this time, do you, unless you happen to be talking about birds, maybe?

A. No.

Q. Did you hear Dr. Wurster's testimony this morning when he was talking about an experiment that involved the shooting of birds in a given area, and he said that they were able to reduce the population only to about 25% of what it formerly was?

A. I heard that, yes. (737)

Q. And from that he drew the conclusion, if I recall, that we wouldn't have to be afraid of the hunter and the fisherman and the lobsterman, people like that, because in this competitive process the animals can take care of themselves against man's deliberate attempts just to kill them off so long as they are not using something indirect like DDT? You remember him saying that?

A. Yes, I do.

Q. And do you agree that you can apply that to all species for all time?

A. I agree to a certain extent.

Q. You have heard about the demise of the passenger pigeon, haven't you?

A. Yes.

Q. Well, now, that was hunted out of existence, wasn't it?

A. Not entirely, no. It was hunted down to the point of no return.

Q. What about the American buffalo? That was pretty nearly exterminated by the people who were working on the railroads when they were pushing across the country, wasn't it? (738)

A. Yes, but I don't think you can draw a comparison between the passenger pigeon and the buffalo. These are two different things.

MR. CORWIN: I have no further questions. Thank you very much for your interesting testimony.

(The trial was adjourned to December 5, 1966 at 10:00 A.M.)

Monday, December 5, 1966 (740)

THE COURT: All right. You may proceed, counsel.

MR. YANNACONE: Mr. Puleston, please take the stand.

DENNIS PULESTON, previously called as a witness in behalf of the PLAINTIFFS, having been previously duly sworn, upon recall further testified as follows:

DIRECT EXAMINATION by MR. YANNACONE:

Q. Now, Mr. Puleston, I think last Wednesday Mr. Corwin asked you a number of questions about ospreys. To go back to the osprey, have you had any personal experience with studying this particular bird?

A. Yes, I have.

THE COURT: . . . Go ahead. Let us concentrate and get right down to cases, counsel. Let me say to you that I read the minutes over, and they were voluminous. I find that basically now I understand what we are trying to do here. It took me the best part of a day to find out. I have given you both an awful lot of latitude. Now, counsel, I want you to concentrate. I told you what I want. I told both of you what I want. I want to know if DDT is dangerous, and I want to know whether it has been used by the county and the other defendant or with the consent of the other defendant. Concentrate on what we are trying to prove. (741)

Q. Mr. Puleston, you testified on direct that you had occasion to study the natural resources in the County of Suffolk, didn't you?

A. Yes, sir.

Q. All right. I show you this exhibit, and I ask you if you can identify it?

A. Yes. (742)

Q. Will you tell the Court what it represents?

A. It represents a food chain or a food relationship or food web, whatever you would like to call it, in a fresh-water pond or stream in Suffolk County. (743)

THE COURT: He is offering it in evidence. Do you have any objection?

MR. CORWIN: I object to it, and I submit that in view of the concession made, there is no necessity to clutter up the record with a lot of photographs about which there has been ample testimony. (744)

THE COURT: I think he is trying to impress his point more clearly on the court. Perhaps it might be helpful. I haven't seen it yet as of this moment. I am going to allow it for the edification of the Court. Mark it in evidence. There is no harm in having it in the record. Mark it. (745)

(The chart was received in evidence and marked as PLAINTIFF'S EXHIBIT 3.)

Q. Now, Mr. Puleston, with reference to that particular exhibit 3, would you please describe the food web there depicted? We are talking specifically about Suffolk County from your own experience.

A. I call it a food web in preference to a food chain, because the connections between the mallard duck, which you see in the center, and the phytoplankton, which you see in the left hand corner, is a rather confused chain or linkage whereby there are not distinct levels. Some people refer to it as a food pyramid. But in any case, in all these ecosystems, we have what we call a top carnivore. In this case it is the hawk at the top of the page and the duck in the middle; also the heron and the kingfisher on the right hand side. These are all top carnivores, and these are the creatures which are most susceptible to any kind of toxic materials which they ingest into their systems.

There are several reasons for this: One is the concentration factor. (746)
The fact that they are concentrating materials by an order of magnitude from the other creatures further down the line.

It is a rough rule of thumb that each step in one of these food webs or chains represents an increase by an order of magnitude, in other words of ten times as much of concentration.

Now, that is one of the reasons why these top carnivores are particularly susceptible to toxic materials and why we see them becoming scarcer. Another reason is that they have much longer life spans than the other creatures further down the line. Therefore, they have a greater opportunity to concentrate.

Another factor is that these top carnivores in obeying the laws of natural selection are far more inclined to take a sick or diseased or old creature rather than a healthy one. So the concentration further is exaggerated in this system.

Now, starting with the phytoplankton down in the left hand corner, and it is then taken by the mosquito, then gets into the frog, and the frog is eaten by the snake. We have a number of complicated chains there. (747)

Incidentally, the amphibians themselves, the frogs, salamanders, and newts are becoming extremely scarce.

In the area that I mentioned last Wednesday, in South Brookhaven, where we had at one time a very large and vigorous population of hyla crucifer, the spring peeper frog, it has now entirely disappeared. This cannot be laid to any cultivation, because there is none there. The edges of the marshes are bordered by deciduous woods which have not been disturbed by man.

These small amphibians, incidentally, are extremely useful in controlling mosquito populations both in the larvae form and in the flying insect form. These mosquito larvae and other small insects are also taken by warblers.

Now at the time when there is a very large hatch of mosquitos in the late spring--and May is the time when a large number of migrant warblers are passing through on their way to the breeding grounds up in the coniferous forests of Canada and further upstate, New York---- (748)

MR. CORWIN: If the court please, I am sorry to interrupt. I realize that the Court opened the door on this Pandora's box, but I submit that the testimony that is coming out now is improper redirect, and I object to it most strenuously.

THE COURT: Let me ask you this, counsel: Why wasn't this brought out on direct examination?

MR. YANNACONE: Your Honor, the witness was put on direct examination Friday for one purpose, and one purpose only--to describe the Audubon-bird count. He was to be recalled, and I assumed we were going to quit a little bit earlier Friday. He was to be recalled to introduce these particular representative examples of the Suffolk County ecosystem on direct examination. This is quite properly direct examination, and I ask leave of the Court to treat it as such.

THE COURT: Next time when you have your affirmative case (749) and direct examination, I want you to stay with it. In other words, the place for you now is rebuttal rather than redirect.

* * *

Q. I show you this exhibit, and I ask you if you can identify it?

A. Yes.

Q. Will you tell us what it represents?

A. It represents the food relationship in an old field. An old field being a field which was formerly under cultivation and that is going back into tall weeds with the beginning of some small woody plants. It is extremely productive of many forms of wildlife in that the weeds produce many kinds of seeds, (750) ground fruits, and these in turn are preyed upon by the top carnivores.

Q. And this fairly and accurately represents a food web within an ecosystem that exists in the County of Suffolk?

A. Yes, it is one of the principal ecosystems.

Q. And you have personal knowledge as to the elements of this food web?

A. Yes.

MR. YANNACONE: All right, Your Honor, I offer that in evidence.

THE COURT: Will this have anything to do with DDT being applied?

MR. YANNACONE: Yes, it will, Your Honor. This is material that will be referred to by other witnesses.

* * *

MR. CORWIN: Same objection. (751)

THE COURT: Overruled.

(The chart was received in evidence and marked as
PLAINTIFF'S EXHIBIT 4.)

Q. Now, I show you this exhibit, and I ask you if you can identify it and its accompanying photograph?

A. Yes.

Q. Will you tell us what it is?

A. It represents an ecosystem in the pine-oak scrub, which is a typical and very widespread ecosystem in Suffolk County.

MR. YANNACONE: I offer that in evidence, Your Honor.

THE COURT: All right. Same objection and same ruling (752)

(The chart was received in evidence and marked as
PLAINTIFF'S EXHIBIT 5.)

Q. Now, I show you this exhibit, and I ask you if you can identify that?

A. I can.

Q. Tell us what it is?

A. It represents the ecosystem in a deciduous woodland, the type of which is typical of Suffolk County.

MR. YANNACONE: I ask that it be offered in evidence.

THE COURT: Same objection; same ruling.

(The chart was received in evidence and marked as
PLAINTIFF'S EXHIBIT 6.)

Q. I show you these exhibits and I ask you if you can identify them?

* * *

THE COURT: Counsel, hold it please. I have two of these. (753)

MR. YANNACONE: No, Your Honor, you don't. One is deciduous and the other is the developed area. One has a horned owl and the other has a screech owl.

THE COURT: All right.

* * *

MR. YANNACONE: I offer that print for identification. (754)

THE COURT: Mark it for identification.

(The chart was marked as
PLAINTIFF'S EXHIBIT 7, for identification.)

Q. I show you this exhibit, and I ask you if you can identify it?

A. Yes, I can.

Q. Will you tell us what it is?

A. It represents an ecosystem in a developed area such as a small town, such as Easthampton or a similar area, where there are gardens, tall trees, perhaps farmlands.

MR. YANNACONE: I offer that into evidence, Your Honor. (755)

* * *

(The chart was received in evidence and marked as
PLAINTIFF'S EXHIBIT 7.)

MR. YANNACONE: I have no further questions, Your Honor.

MR. CORWIN: Your Honor, what I would like to do while the witness is on the stand is to have a moment to go over these exhibits with my professional people.

THE COURT: Go ahead. (756)

MR. YANNACONE: Your Honor, before cross-examination of this witness begins, I would like to make an offer of proof in an effort to perhaps expedite this matter.

You heard the witness discuss with reference to the fresh-water marsh the decline in abundance of a number of species shown in the food web. I would like to offer through this witness evidence of the decline in abundance of other elements throughout all of those food chains. Now, I can do that----

THE COURT: You won't have to. If you can get rid of one chain, you have enough, haven't you?

MR. YANNACONE: But I would like it known that we were prepared to go over these.

THE COURT: All right. Make it known that you can do this with the witness, and also show that other chains would disappear, is that correct? (757)

MR. YANNACONE: That's correct, Your Honor. Elements of other chains.

THE COURT: All right.

CROSS-EXAMINATION by MR. CORWIN:

Q. Now, Mr. Puleston, you just heard the offer of proof made by counsel. Would your testimony to the effect that he suggested be based upon a census similar to the census that Dr. Wurster took when he was making his Hanover-Norwich test of the DDT and the effect on the robins when the elm trees were sprayed?

A. It depends upon what kind of---

Q. Can't you just answer my question, sir? I'm not trying to be difficult to get along with. It admits of a yes or no answer. Did you take any census of any of these animals that you say are disappearing?

A. Yes.

Q. How did you go about it? Just tell me one animal that is disappearing.
A. Well, if you will mention one animal, it is a lot easier, because
you can't take a census of--- (758)

Q. All right. Of how many species did you take a census?
A. I have been taking censuses on almost a continuing basis ever
since I began with bird studies in this area.

Q. Just in around where you live in Brookhaven, you mean, don't you?
A. Not entirely, no.

Q. Where else?
A. In other areas of Suffolk County.

Q. How much time have you spent doing this work?
A. The average number of species that I actually observed during the
course of a calendar year is approximately 250.

Q. And are they all declining?
A. No.

Q. How many are declining of the 250 you studied? (759)
A. I'm sorry, I cannot answer that question categorically. I have
never counted the number.

Q. Have you kept any record of the count of the census?
A. Oh, yes.

Q. Have you got any graphs to show a trend?
A. No.

Q. Some of these go back before DDT was extensively used?
A. In some cases, yes.

Q. You mentioned that the peeper is disappearing.
A. Yes, it has disappeared entirely from a considerable area in South
Brookhaven.

Q. Just one area?
A. Yes.

Q. You wouldn't say it disappeared up around where I lived, would you?
A. I wouldn't know. I don't know where you live.

Q. Well, your study is confined to a rather relatively small area, isn't that so?
A. The intensive study, yes, but I have also made a general study all
over Suffolk County.

Q. The peeper is to be found in the swamp, isn't it? (760)
A. Yes.

Q. And in some cases because of the development of real property by
a predator known as a real estate agent or a developer, the lakes aren't there any
more, isn't that so?
A. Exactly.

Q. That would account for the disappearance of a peeper, wouldn't it?
A. In a certain area where such development was taking place, yes.

Q. Would it be your testimony that all of these declines with respect
to which he made this offer of proof was caused solely by DDT?
A. Certainly not.

Q. Would you like to specify any one which you say was caused solely by DDT?

* * *

A. It is my opinion that the accipitrine hawks have definitely de- (761)
clined due to DDT.

Q. Thank you. Any others?

A. The bald eagle, the osprey.

Q. I'm talking about Suffolk County now.

A. Yes, yes, the ospreys.

Q. Do you think that is solely because of DDT?

A. No, I didn't say solely.

Q. I am asking you if you can give me an example of any species of which the disappearance of great decline you attribute solely to DDT? * * *

A. I wouldn't be prepared to say that any species has disappeared or has been reduced in numbers due solely to DDT.

Q. And you wouldn't be able to make any representations as to what (762) percentage of the decline was attributable to the DDT, would you?

A. No.

Q. You are acknowledging that the disappearance of various forms of wildlife is caused by many factors?

A. I'd say the overruling factor in the species I have mentioned was DDT in that it has reduced their reproductivity.

Q. Can you account for the report what this plaintiff in this lawsuit has reported to be reputable, scientific, and authoritative--I lost either the subject or the verb of my sentence. I better start over again.

With respect to the report, there has been some testimony that many of these birds are increasing in number. You agree to that, don't you?

A. Yes.

Q. As a matter of fact, some of them appear in the food chains which are now in evidence as an exhibit?

A. Yes.

Q. How do you account for that? (763)

A. I account for the fact that many of them, as I mentioned before, are the top carnivores in these food relationships, and, therefore, they are concentrating toxic materials in their systems at a higher level than other creatures further down the chain, who have shorter life times and a lower concentration factor.

Now, Dr. Wurster the other day made a point that if you shot a bird, another bird will soon take its place because there is a floating population which does not have breeding territory. Therefore, these gaps are filled in naturally.

Now, in the case of many of the birds of prey, the owls and the hawks, even although there are many still very suitable breeding areas for the, they are just disappearing from these breeding areas simply because there is no floating population to fill in these gaps. These figures are borne out by the very accurate counts that are made annually at the Hawk Mountain Sanctuary in Eastern Pennsylvania, where you have actually hundreds of observers during the fall migration of hawks. The reduction there, particularly in the accipitrine hawks has been very marked.

Now, counting from between 1935 and 1948, the annual average of hawks (764) passing the Hawk Mountain Sanctuary, which by the way is probably the most important flyway in the Eastern United States, the average was 7500 between the years 1935 and 1948. In the six years between 1960 and 1965, the average was 3300.

Q. Now, will you please stop right there, Mr. Puleston, and tell me what effect on the difference of those figures the amount of DDT used by the Suffolk County Mosquito Control Commission had, if any, if you can?

A. I don't know, because I don't know exactly where these hawks came from, except they all feed out of Eastern United States.

Q. Do you know anything about the bird count in Heckscher State Park?

A. No.

Q. Do you know anything about the extent to which DDT has been used in there?

A. I know it has been used considerably, yes. (765)

Q. But you don't know anything about the relative numbers of varying species of birds over any period of time, do you?

A. No.

MR. CORWIN: I have no further questions.

REDIRECT EXAMINATION by MR. YANNACONE:

Q. Mr. Puleston, you were asked about the increase in certain numbers of species in the food web shown in the exhibits. Can you give us some representative species that have increased, and you can refer to the exhibits, if you will? Tell us what species have increased in numbers?

A. I don't know of any species in this freshwater pond ecosystem which has increased. I would say very definitely that robins have increased during the past 100 years, if that was partially an answer to your question, due to the development of more cultivated lands which are suitable to a robin population. I would say there are more chipping sparrows. I would say there are more chipmunks in our deciduous woods, than there were sometime ago due to the lack of predators. (766)

Q. In other words then, this increase which you indicate throughout these food webs, that can be accounted for by the elimination of the top carnivore predators?

A. Yes.

MR. YANNACONE: I have no further questions.

RE-CROSS-EXAMINATION by MR. CORWIN:

Q. Isn't it a fact, Mr. Puleston, that these chains or webs as shown on these exhibits are symbolic; that they are not intended to embrace the entire food chain, are they?

A. You are certainly right.

Q. Do you have any idea where most of the DDT is used in Suffolk County, and I am asking for you to now characterize? You have used in your exhibits lakes and a pine forest, a deciduous forest, a built-up area, and the old field. Do you know anything about the use of DDT in Suffolk County with reference to those various types of localities? (767)

A. I know that there is a certain amount of DDT that was used-- and I don't know whether it still is--in developed areas where these fog-mist blowers come around at various times of the year. I know that it has been applied very extensively at the edges of salt marshes and also in around bodies of fresh water. I also know that any agricultural land contiguous to streams will certainly feed some of the DDT down into these streams and bodies of water.

Q. Is that as direct and complete an answer as you can give to the question that I asked you?

A. If you wish me to be more specific?

Q. I'm asking you to be specific with respect to amounts. Do you know anything about the relative amounts of DDT used in these different areas?

A. No, I don't.

MR. CORWIN: Nothing more.

MR. YANNACONE: No further questions, Your Honor.

* * *

THE COURT: Next witness.

MR. YANNACONE: Arthur P. Cooley, please take the stand.

ARTHUR P. COOLEY, called as witness in behalf of the plaintiffs, being duly sworn, testified as follows: * * * (768)

THE WITNESS Arthur P. Cooley, * * *
341 Durkee Lane, East Patchogue, New York

DIRECT EXAMINATION by MR. YANNACONE:

Q. Mr. Cooley, what is your occupation?

A. I am a biology teacher at Bellport High School.

Q. Where do you go to school?

A. Cornell University.

Q. What is your degree?

A. I have a bachelor's degree in biology and a master's degree in biology, both from Cornell University.

Q. Have you had occasion in the course of your every-day life to observe natural resources in the County of Suffolk?

A. I have. (769)

Q. Have you made any studies thereof formally or informally?

A. Yes.

* * *

Q. I show you exhibit 8 for identification, and I ask you to describe it?

A. This represents a food web which has animals and plants which represent the marshes of Suffolk County.

Q. Can you identify all the elements of that food web from your own personal knowledge and observation?

A. Yes, I can.

(The chart was received in evidence and marked as PLAINTIFF'S EXHIBIT 8.) (770)

MR. YANNACONE: I offer this to be marked for identification, Your Honor.

THE COURT: Counsel, do we need so many of these?

MR. YANNACONE: Your Honor, each one is a representative food web, that will be tied in with the DDT present in the County of Suffolk at this time.

THE COURT: Well, can't we do that by oral testimony rather than charts? If you give the Court one chart, I will look at it, and I will see what it is. By the same token, is there any way he can do it or is it all testimony?

MR. YANNACONE: Your Honor, I feel that the charts are representative; that they will clarify much of the oral testimony. (771)

THE COURT: All Right. Go ahead, counsel.

* * *

(The chart was marked as PLAINTIFF'S EXHIBIT 9, for identification.)

Q. Now I show you this exhibit 9 for identification, and I ask you if you can identify it and describe it? * * *

A. This chart represents the types of animals in the food web and plants which can be found in the areas around Montauk Point and Peconic Bay in Suffolk County.

Q. Are you personally familiar by observation of the elements of that food web shown on that chart?

A. Yes, I am. (772)

Q. Does it fairly and accurately represent a food web found in that area?

A. Yes

* * *

(The chart was received in evidence and marked as PLAINTIFF'S EXHIBIT 9.)

Q. Now, Mr. Cooley, with reference to the food web shown in those exhibits 8 and 9, can you tell us whether there has been any change in the relative abundancy of any of the elements of the food web shown?

A. Yes.

Q. And over what period has it been shown?

A. In the last 15 or 20 years.

Q. Will you describe for the Court what elements have changed in relative abundance?

A. On exhibit 8, the fiddler crab has decreased seriously in Suffolk County. The clapper rail, which is pictured in that same food chain and which (773) feeds primarily on crustacea and in certain areas predominantly on fiddler crabs, has diminished in population. On that same exhibit, the diamondback terrapin has decreased.

On exhibit 9, the osprey shown in the center has certainly decreased.

The blue-claw crab, which is pictured there, has decreased.

The peregrine falcon has decreased.

Q. And can you account for any natural causes for these decreases?

A. Well, I don't think that there is any, sir. Yes, there are certain natural causes which can cause these decreases.

Q. Do you want to tell us about some of them and whether or not they were responsible for the decrease based on your observations?

A. The osprey has certainly decreased. Observations made at Gardiner's Island indicate that, and testimony already heard by this Court indicates that. Scientific literature indicates that DDT is found in the food chains of these organisms. (774)

Now, ospreys and peregrine falcons represent the top of the food chain. They are top carnivores, as has already been presented in evidence here. These are able to concentrate DDT in their tissues. Since the insecticides which are used are designed for insects and since crustaceans are taxonomically very, very similar to them and have very similar systems, similar nervous systems, and so on, they too have been apparently decreased by this particular method.

Q. Have any of the elements of those food webs increased in abundance during that period of time?

A. In chart number 9, there is pictured a brant which has increased considerably since 1931.

Q. What is a brant?

A. A brant is a small goose which feeds primarily on a water plant known as eel grass. In 1931 there was a widespread disease which eliminated eel grass from much of its range in this country and in Europe. The brant losing its food supply, decreased. Eel Grass has since returned, and the brant (775) apparently also has been able to feed on sea lettuce and an algae called enteromorpha. It doesn't have any common name that I know of. They have been increasing in great numbers since that time.

Q. Are there any other species on that exhibit that has increased?

A. Not to my knowledge.

MR. YANNACONE: I have no further questions.

* * *

CROSS-EXAMINATION by MR. CORWIN:

Q. Do you know anything about the increase of any other species in the food chain that are not shown on the chart?

A. Yes.

Q. There have been increases in other species?

A. Yes.

Q. That is not shown on the chart, isn't that so?

A. Yes, that's true.

Q. Do you know anything about the number of lineal miles of marshlands that you have been talking about where the fiddler crab, for example was prevalent a number of years ago, say in 1950?

(776)

A. No, I do not.

Q. Do you have any idea of how many miles, regardless of what that number might have been, have been affected by dredging, by the Suffolk County dredgers and by private dredgers in Suffolk County for the development of marinas and things like that?

A. No, I do not.

Q. You don't have any doubt but that the relative number of fiddler crabs has been affected by that, do you?

A. In certain areas they have been, yes. If you remove the habitat that that organism lives in, he can no longer live there.

MR. CORWIN: No further questions.

* * *

MR. YANNACONE: I call George M. Woodwell to the stand.