Hello students,

this program is for Bachelor of Science,

first year, semester two course.

Title is animal behavior course, code ZOG-102.

The title of this unit is introduction

to animal behavior module name is

Proximate and ultimate causes of behavior.

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as assistant professor in Zoology

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Science and Commerce, Sanquelim the outline,

includes proximate causation of behavior,

ultimate causation of behavior and

fixed action pattern of behavior.

Learning outcomes include at the end of this module.

The student will understand the

proximate and ultimate causes of behavior.

Gain knowledge of fixed action

patterns of behavior and also

will be able to cite examples.

of fixed action patterns when

we see a bird building its nest.

Monkeys grooming each other.

A frog protecting the eggs.

A Peacock, spreading its feathers, etc.

The question often pops in our mind.

Why do animals do what they do?

These varying behaviors have led to

questions as how behavior evolved and adapt,

and whether they are genetic or learned.

The answer to this question can be

constructed by asking the same question,

which Niko Tinbergen believed should

be asked of any animal behavior.

The questions that are based on causation

development function and evolution

form the basis of understanding any

behavior of an animal or groups of

animals and can be summarized into

the proximate and ultimate causes of

behavior causation and ontogeny

Are proximate causes.

While adaptation and phylogeny

are the ultimate causes,

proximate causes are the immediate

and certain causes.

It explains the biological

action in terms of the immediate

mechanical influences on a trait.

Basically, how the reaction occurs.

It focuses on the mechanics of behavior.

The ultimate causes,

also called evolutionary

causes are historical explanations

And evolutionary terms of why

the action occurs and are often

linked to evolutionary fitness.

It focuses on the advantages of the behavior.

In other words,

a proximate cause is an event which is

closest to or immediately responsible for

Causing some observed result,

in contrast to the higher

level ultimate cause,

which is a distal cause and usually thought

of as the real reason something occurred.

Konrad Lorenz considered that every

species has a repertoire of stereotypedre

behaviors

called fixed action patterns.

Both proximate and ultimate causes of

behavior follows fixed action patterns.

Fixed action Pattern is an instinctive

behavioral sequence that is unlearned,

unchangeable and once initiated

is usually carried to completion.

In other words,

a fixed action pattern is a series

of behavior elicited by a stimulus,

such that even when the stimulus is removed,

the pattern goes on to completion.

It is common to all members of a species,

and therefore they are the

characteristics of the species

as shared structural features.

It is stimulated by a sign stimulus

once triggered by the sign stimulus.

Fixed action patterns

Proceed even in the absence of

the triggering stimulus.

The behavior is performed correctly

the first time without prior

experience let me explain the

fixed action patterns with some

examples. Niko Tinbergen himself studied

the behavior of the threespine stickleback,

a small freshwater fish,

and contributed to the concept of

Sign stimulus needed to elicit

a specific instinctive behavior.

The males of this species.

Are very territorial and aggressive.

During the mating season they develop

a red spot on their underside.

Tinbergen observed that at this time

male sticklebacks will attack another male

stickleback that enters their territory.

He theorized that the red spot

on their underside was acting as

an innate releasing mechanism,

and when one stickleback observed

another with this red spot,

they would initiate the aggressive attack,

which is an example of a fixed action

pattern to test this Tinbergen

presented the male stickleback.

With a wooden model,

if the wooden model had a red spot,

then the stickleback would attack it.

However, without a red spot,

there would be no reaction

from the sticklebacks.

In this example,

the red underbelly of the other male

stickleback is a sign stimulus that

triggers an aggressive behavior from

the territorial male stickleback,

and this answers the proximate

question that is how or what

caused the aggressive behavior.

The ultimate question is why

does this behavior happen?

This question addresses the evolutionary

significance of the behavior.

The reason is that by chasing

away other male sticklebacks,

the original malel will decrease the

chance that the eggs laid in his territory

will be fertilized by another male.

This explains both the questions of

behavior as how and why it was caused,

and this explains the fixed action pattern.

In this case,

the male stickleback attacks whatever has

a red underside and is essentially

unchangeable and usually carried

to completion a well studied

example of a fixed action pattern,

occurs in ground nesting

waterbirds like greylag geese.

If a female greylag goose’s

egg rolls out of her nest,

she will instinctively use her bill to pull

the egg back into the nest in a series

of very stereotyped predictable movements.

The sight of an egg outside the

nest is the stimulus that triggers

the retrieval behavior.

How this behavior is caused? an egg outside

her nest invokes her to get it back.

And why this behavior is caused?

It is a parenting instinct.

Goose mothers that retrieve their lost

eggs are likely to have more surviving

offspring's on average than those that don't.

However,

this fixed action pattern can also occur

under circumstances where it is not useful.

In other words,

where it does not benefit the goose at all.

If the egg that rolls out of the

nest is picked up and taken away.

The goose will keep moving her head,

as though pushing an imaginary egg.

The goose will try to push any egg

Shaped object, such as a golf ball.

If it is placed near the nest.

In fact,

she even carries out the retrieval pattern

in response to a much larger object,

such as a volleyball.

The sign stimulus or external stimulus to

do so is anything that resembles her egg.

She completes the fixed action

pattern by returning an imaginary egg.

The next example is

imprinting on young chicks.

The young geese follow and imprint

on their mother or anything

they see first after hatching.

The proximate cause here is that during

an early critical developmental stage,

the young ones observe their mother

moving away from them and calling.

The ultimate cause of this behavior

is that by following their mother,

the Young geese receive more care and

learn necessary skills and thus have

a greater chance of survival than

those that do not follow their mother.

In Belding's ground squirrels,

when males reach about two months of age,

they leave the burrow where they were born.

The sign stimulus in this

case is physiological.

It is an increase in testosterone

that triggers this behavior and

becomes the proximate cause.

The ultimate cause of these natural dispersal

is to avoid fitness costs associated

with life in the Natal area and might

allow them to obtain benefits elsewhere.

Herring girl chick feeding

behaviour is another example.

The parent gull has a red spot on its beak.

When it taps, its beak on the ground,

the chick will peck at

the spot several times.

This packing triggers a response in the

parent to regurgitate food for the check.

Here the red spot is a sign

stimulus and is the proximate cause.

The ultimate causation is

the anticipation of food.

But when the young gulls are presented

with a vertical object having a red

spot swung horizontally at its end.

They still complete the behavior

of pecking on the red spot.

These are the references for this module.

Thank you.