On the Reaction of Captive Sea Lions to Live Fish

Katherine Karlis, Rebecca Russo and Michael Noonan
Aquarium of Niagara and Canisius College, Buffalo, New York
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Introduction

It has been noted elsewhere that captive individuals of a number of carnivore species (such as domestic cats) show considerable variability in their reaction to live prey items. While nearly all individuals will pursue animate prey items, many will not go on to kill and eat them. It has been suggested that this variability may derive in part from the age at which the individual predators are initially introduced to live prey. It has been proposed that while the pursuit of prey items may be more firmly "pre-programmed", each individual must acquire the experience of killing and eating live animals during a critical developmental period in order for it to demonstrate the consumption of live prey as an adult.

Within this context, we tested the reaction of five captive California sea lions to live fish. The subjects had been raised in captivity and had never before encountered live prey. We wanted to know whether sea lions reared under such conditions would pursue and consume live fish items if given the opportunity.

Procedure

The subjects were five female California sea lions (Zalophus californianus). Each had been reared in captivity on a diet of recently thawed commercial "fish" (herring, capelin, mackerel, smelts and squid). None had prior experience with tinfoil barbs or with any live fish.

The test food items were tinfoil barbs (Barbus schwanenfeldi), 6-8cm in length. They were presented to the sea lions under three circumstances

- alive in free swim (sea lion allowed to "discover" fish in 26,500 liter pool)
- alive hand fed (in the manner in which their normal food is presented)
- thawed hand fed (in the manner in which their normal food is presented)

All testing took place at 7 am after the sea lions had undergone a normal twelve-hour overnight fasting period.

Results

Our findings are summarized in Table 1. Four of our five subject noticeably oriented to the live fish when they encountered them in the free-swim condition (Figure 1) Three of the sea lions repeatedly pursued the live fish, approached them within 1-2 cm and nuzzled them with extended vibrissae (Figure 2). Two of the sea lions repeatedly took the fish into their mouths and released them still alive (Figure 3)

When live fish were offered to the subjects in the manner in which thawed fish are normally presented (Figure 4), none of the sea lions ate the fish, either spitting them out or refusing take them into their mouths in the first place.

Later, when individuals of the same fish species were frozen and then thawed and presented to the sea lions as part of an otherwise-normal feeding, two of the sea lions readily ate the fish. One other sea lion ate the first thawed fish offered but thereafter refused.

Table One: Reactions of subjects to tinfoil barbs under different circumstances.

Subj	Age	History	Free Swim Live Fish	Hand Fed Live Fish	Hand Fed Thawed Fish
Sq	9	Captive born	Sustained pursuit mouthing	Spit out	Ate
Ca	15	Captive born	Sustained pursuit nuzzling	Spit out	Refused
Di	8	Captive born	Brief orientation	Refused	Ate
Jo	19	Beach stranded hand raised	Sustained pursuit mouthing	Refused	Refused
Ju	9	Captive born hand raised	Ignore	Refused	Ate one refused rest

Discussion

In general, our sea lions appeared to be initially attracted to the live fish when they first encountered them. Most of them engaged in pursuit and brought their mouths into close proximity of the fleeing fish. However, none of the sea lions actually ingested the fish. This strikes us as reminiscent of behavior described for domestic cats in which captive-reared adults will pursue and pounce upon live prey items but often not kill or eat them. It is tempting to speculate that sea lions, like cats, have a critical period during their adolescence during which time they need to capture, kill, and consume live prey in order for such events to become part of the behavioral repertoire. Perhaps a developmental sequence of this nature is a widespread characteristic within the carnivora/pinnipedia taxonomic cluster. Of course, this can only be tested directly by conducting similar observations on sea lions that had prior experience with consuming live prey.

We recognize that our introduction of live tinfoil barbs was the sea lions' first experience with that species of fish. It is worth questioning whether they would have responded the same way had they been presented with live individuals of one of their customary food species (e.g., herring), and we encourage studies of this type to be carried out in the future.