82. *Is Parental Care in Fish Prolactin-Dependent?* S. E. WENDELAAR BONGA, A. J. H. DE RUITER,* H. SLIK- 
HUIS,* and L. DIRKS, Departments of Zoology, Universities of Nijmegen and *Groningen, The Nether­ 
lands.

In several telost species prolactin has been implicated in the endocrine control of parental care. However, 
most studies are concerned with the stimulating effects of prolactin on one aspect of parental care, namely 
fanning behaviour. We have shown that in male sticklebacks—only males display parental care in this species— 
cichlid behaviour in males in breeding condition. These results are in line with the supposition that prolactin is a 
most studies are concerned with the stimulating effects of prolactin on one aspect of parental care, namely 
prolactin cell activity is increased during the period of intense parental fanning (Slijkhuis et al., in press). 
Administration of homologous prolactin, by means of implantation of prolactin cell grafts, stimulates fanning 
behaviour in males in breeding condition. These results are in line with the supposition that prolactin is a 
parental care hormone in fish, as it is assumed to be in higher vertebrates. However, in the mouth-brooding 
cichlid *Sarotherodon mossambicus*, a species that does not show parental fanning behaviour, we were unable 
to demonstrate an increase in prolactin secretion during the period of parental care. Prolactin secretion was 
estimated by both ultrastructural morphometry and determination of the 

83. *Fine Structure of the Pineal Body and Effect of Short Photoperiod, Pinealectomy, and Melatonin 
Treatment in Liza ramada.* G. SAGI and M. ABRAHAM, Department of Zoology, The Hebrew University 
of Jerusalem, Jerusalem, Israel.

(1) *Liza ramada* breeds normally under short photoperiod during the months of December and January. 
In experimental specimens, short photoperiod induced gonadal growth out of the breeding season. (3) 
Pinealectomized and control specimens exposed to long photoperiod showed undeveloped ovaries and low 
gonadosomatic index (GSI). (4) Pinealectomy accelerated ovarian growth in specimens exposed to short pho­ 
toperiod and stimulated GSI. (5) Doses of 50–250 μg melatonin per fish injected daily intramuscularly over a 
month inhibited gonadal growth, reducing the GSI to 1.59 with the low dose and to 0.74 with the high dose, as 
against 2.4 in controls. Conclusion: The pineal body of *L. ramada* inhibits ovarian activity under short pho­ 
toperiod, possibly by melatonin secretion. EM study of the pineal body reveals that the "supporting cells" 
around the photoreceptor cells are intimately connected to nonmyelinated axons. The periphery of the 
pineal displays numerous capillaries with wide pericapillary spaces.

84. *Increase in LHRH Concentration in Microdissected Hypothalamic Areas of Male Newts Following Stress 
or Corticosterone Injection.* F. L. MOORE and R. T. ZOECKER, Oregon State University, Corvallis, Oregon.

Plasma corticosteroids levels increase and reproductive functions decrease when male newts (*Taricha 
granulosa*, Amphibia) and other vertebrates are exposed to stressful environments. It was hypothesized that, 
during stress-induced inhibition of reproduction, the high titer of corticosterone acts to inhibit the release of 
LHRH. To test the hypothesis, LHRH was measured in specific brain areas using Palkovits' punch technique 
and RIA procedures. When male newts were stressed by confinement in a small box for 1 hr, the concentration 
of immunoreactive (ir) LHRH increased significantly in the ventral preoptic area (POA), infundibulum (In), 
and rostral hypothalamus (RH). The irLHRH concentration in stressed newts was higher immediately after stress 
than at 3 hr after stress. In another study, a single intraperitoneal injection of 25 μg corticosterone resulted in 
a significant increase in irLHRH concentration in the POA, In, and RH for males sampled at 0.5 and 6 hr after 
injection. In both experiments, irLHRH concentrations were greater in the POA and In than in the RH, with 
no detectable irLHRH in the area of the septal nuclei and amygdala. Assuming that the observed increase in 
irLHRH reflects decreased release of LHRH, the results of both studies support the hypothesis that the stress- 
induced rise in corticosterone inhibits reproduction by interfering with LHRH release.

85. *Hormonal Facilitation of Sperm Release from the Spermapheca of the Red-Spotted Newt (Notophthalmus 
viridescens).* M. P. HARDY and J. N. DENT, University of Virginia, Charlottesville, Virginia 22901.

In most urodeles, fertilization occurs when the stored sperm from the spermapheca encounter ova in the 
cloaca. A mechanism for synchronizing this meeting appears to be required. Several neurotransmitters and