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## Tracing endocrine disruptors

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In recent years, concern has been growing about adverse effects on reproduction in wildlife species. Observed effects, collectively referred to as endocrine disruption, were hypothesized to be due to exposure to compounds in the environment that interfere with reproductive processes.

Of these so-called endocrine disruptors, compounds with estrogenic effects have attracted the most attention.

This thesis describes the research that was performed to identify endocrine disrupting (estrogenic and dioxin-like) compounds and investigate the occurrence of estrogenic effects in the Dutch aquatic environment. Estrogenic effects, such as elevated concentrations of the yolk sac protein vitellogenin and the occurrence of ovotestis in male fish were

observed in breams at several Dutch freshwaters, e.g. at the small river Dommel in Eindhoven. Bioassay directed identification approaches were developed to identify compounds in the environment responsible for the observed activities. Natural and synthetic estrogenic hormones were identified as compounds primarily responsible for estrogenic activities in fish. Natural estrogenic hormones also accounted for estrogenic activity in sediment from Zierikzee harbour, whereas dioxin-like activity at this location could be attributed to the presence of various polycyclic aromatic hydrocarbons.

The work described in this thesis was performed at the Institute for Environmental Studies of the *Vrije* Universiteit Amsterdam.