



CAPÍTULO 02 – ANDAMENTO DO PROJETO BÁSICO AMBIENTAL DO  
COMPONENTE INDÍGENA

**Anexo 14.1.3.3-9 Divulgação dos resultados de  
monitoramento**



UnYLeYa Editora e Cursos S.A

# Programa de Supervisão Ambiental

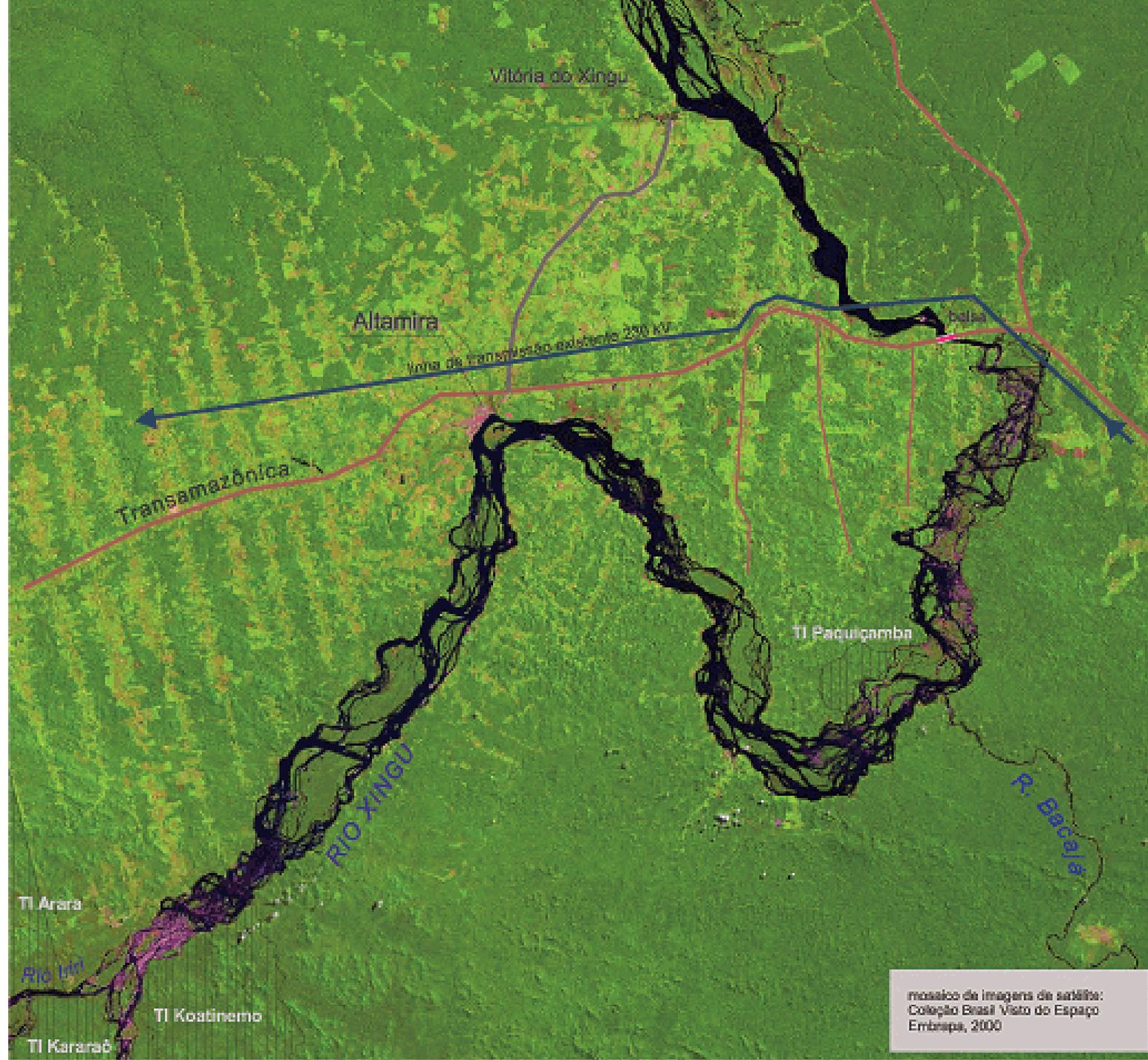


# **DIVULGAÇÃO DOS RESULTADOS DE MONITORAMENTO**

**PROJETO DE ACOMPANHAMENTO DO PLANO DE CONSERVAÇÃO DOS  
ECOSSISTEMAS AQUÁTICOS**

**E**

**PROJETO DE ACOMPANHAMENTO DO PLANO DE GESTÃO DOS  
RECURSOS HÍDRICOS**



Vitória do Xingu

Altamira

linha de transmissão existente 230 kV

Transamazônica

TI Paçuiçamba

R. Bacajé

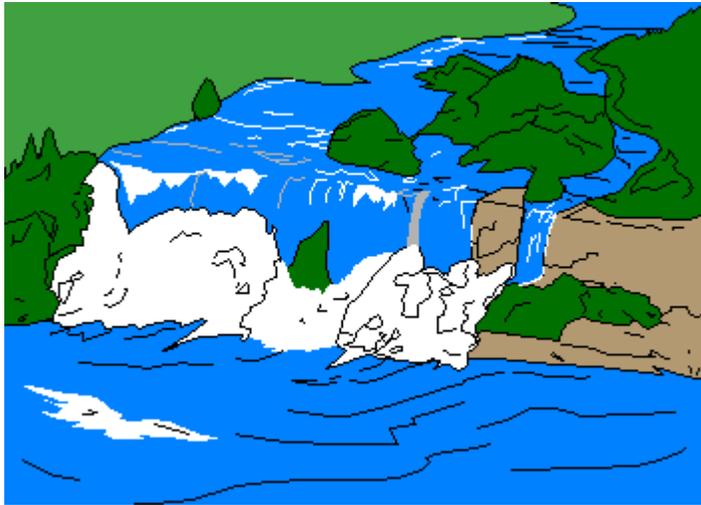
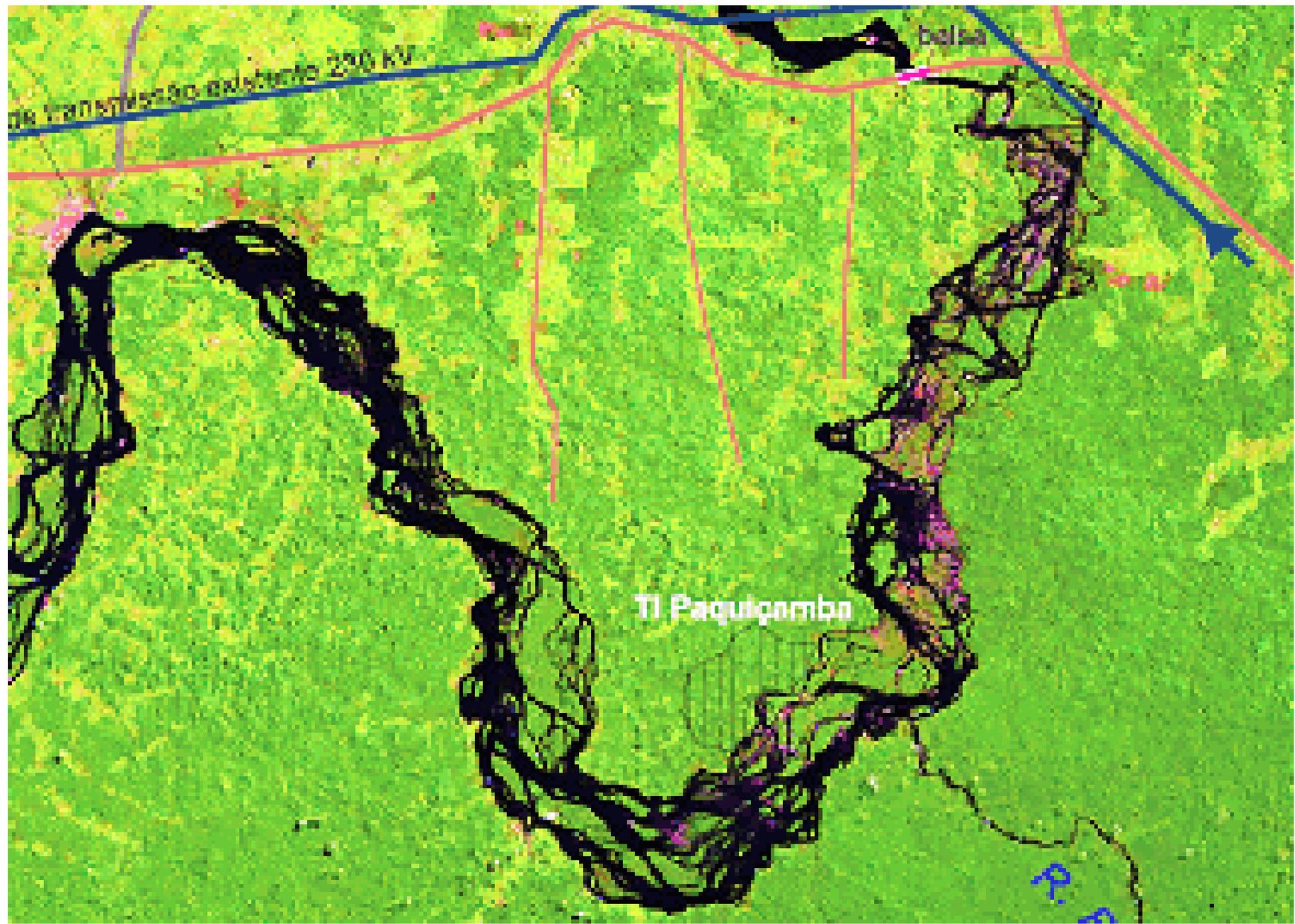
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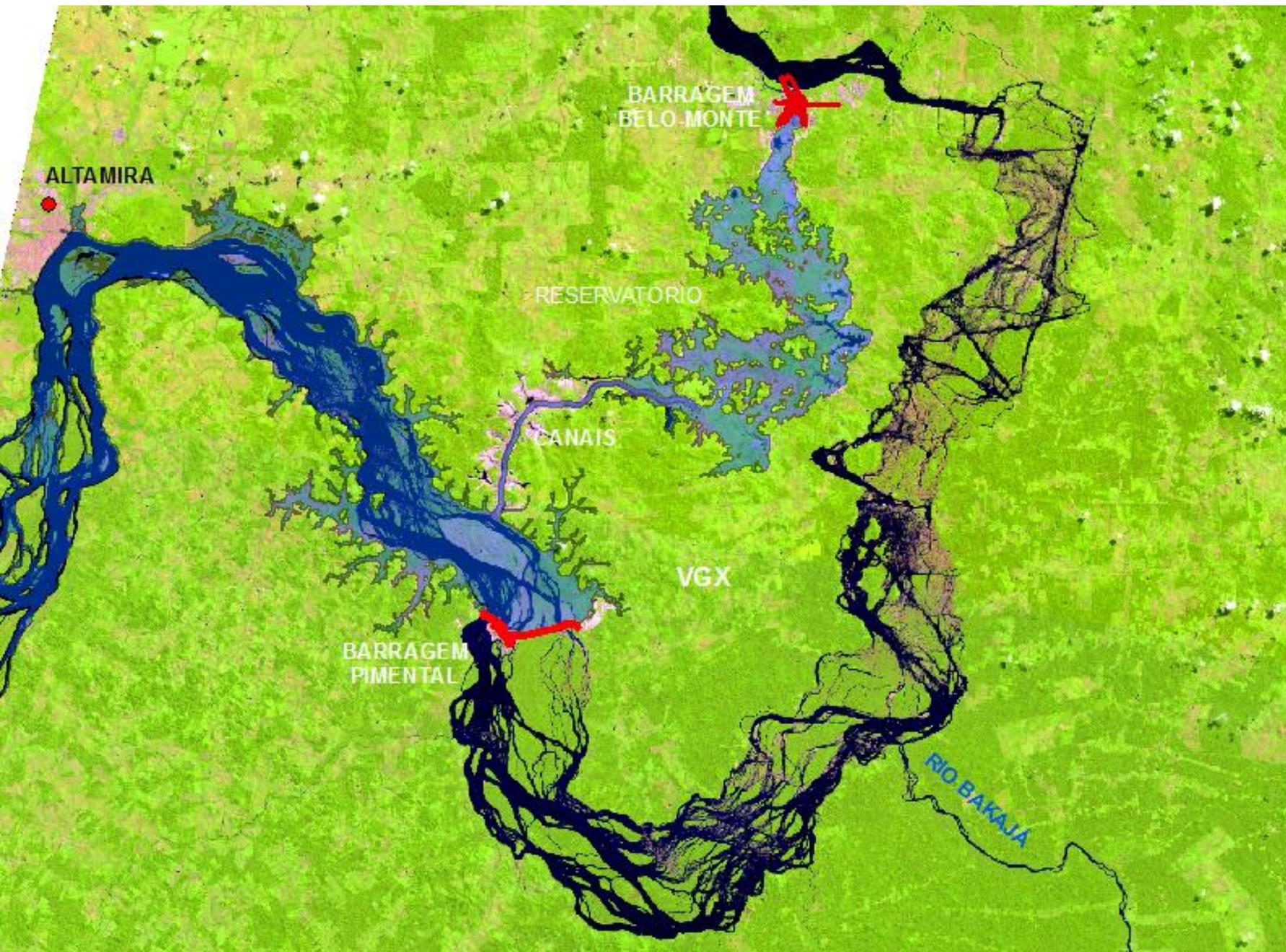
Rio Iná

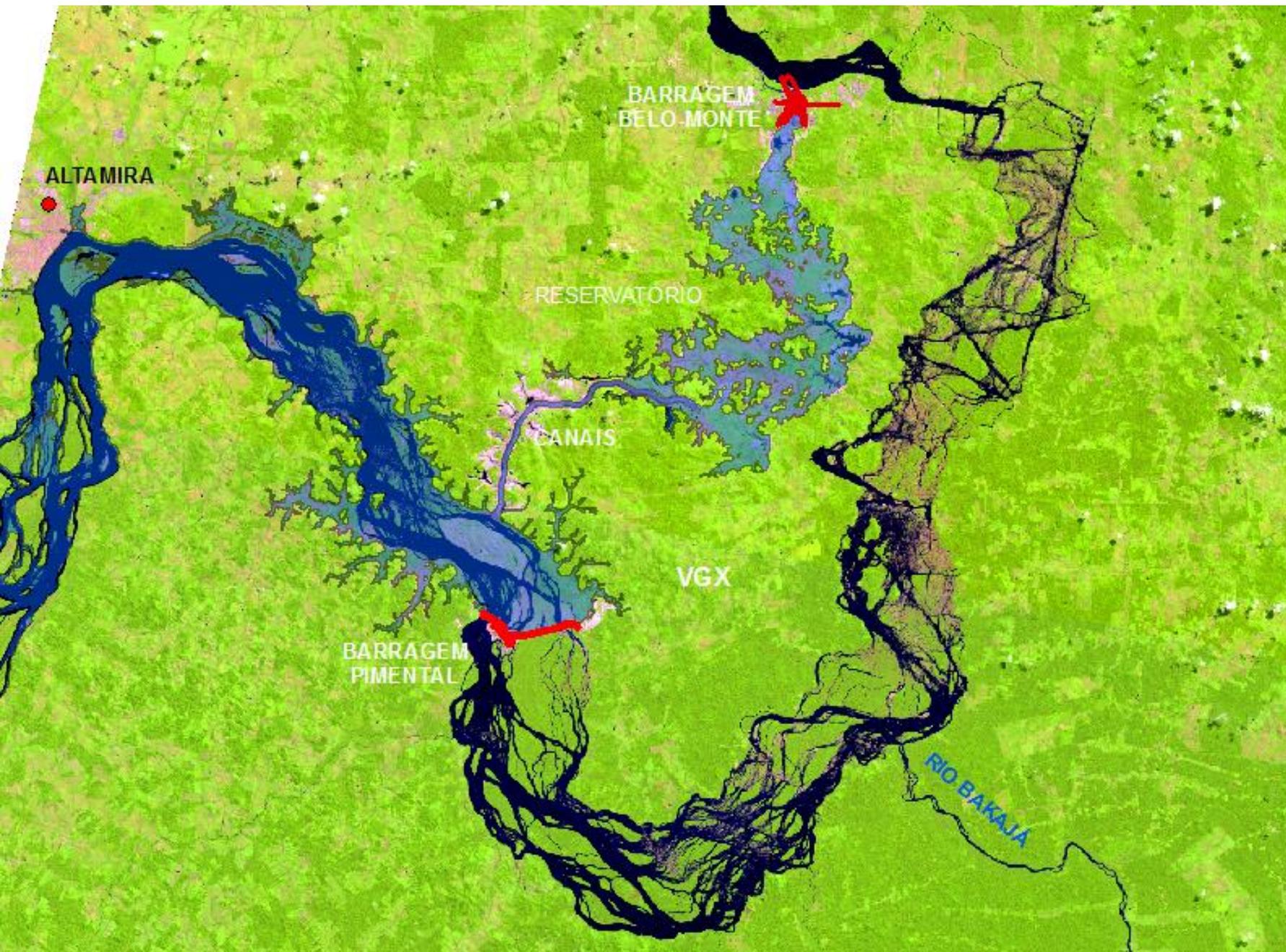
TI Kostinemo

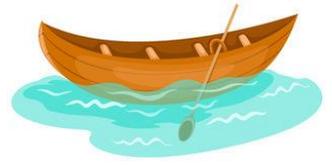
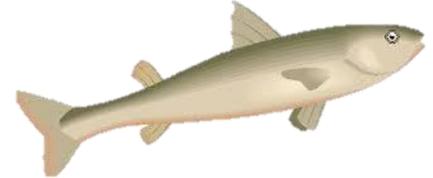
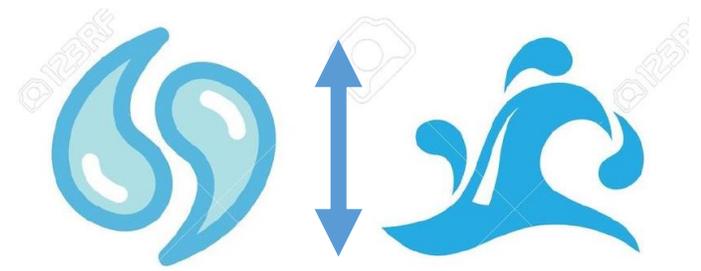
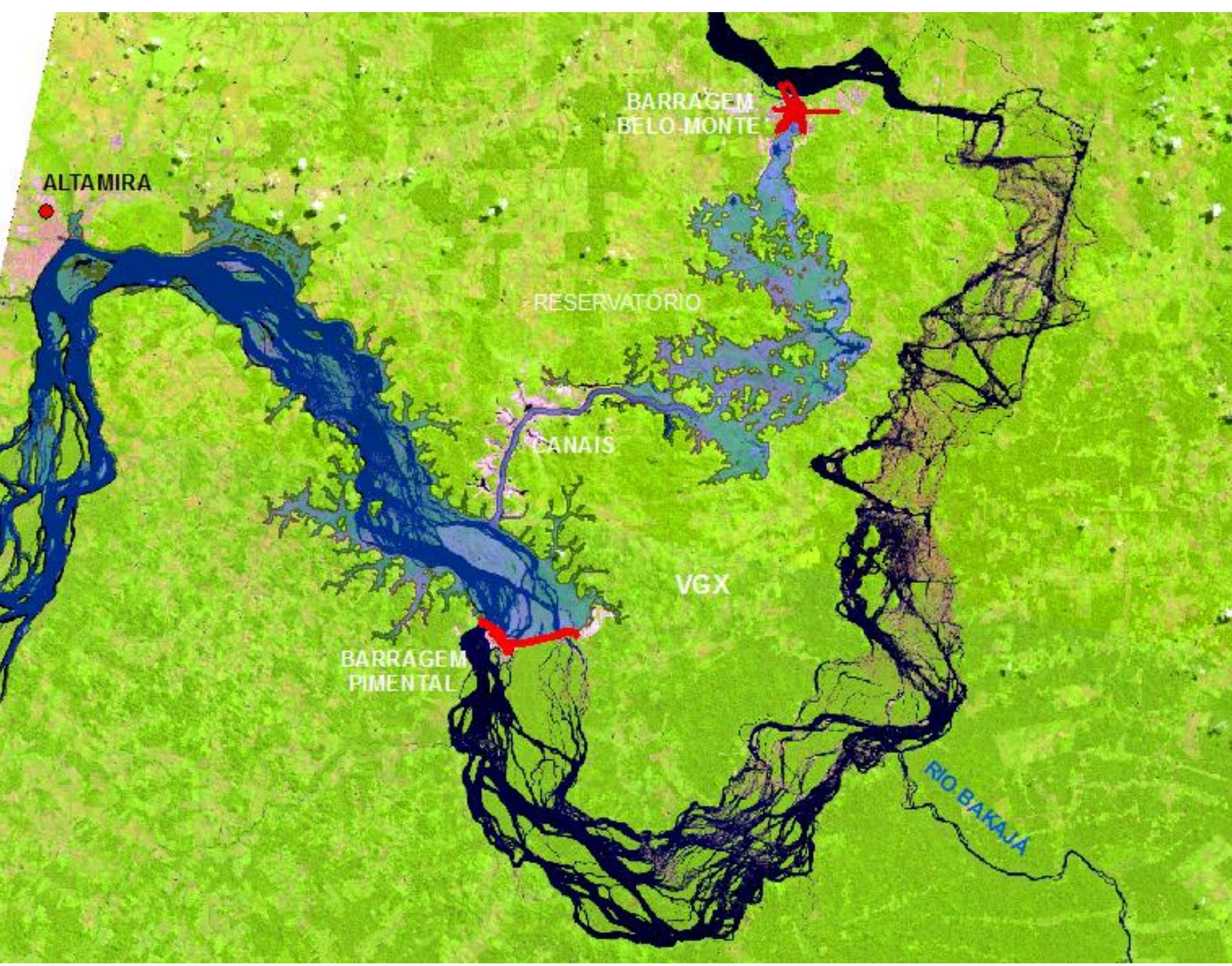
TI Karará

mosaico de imagens de satélite:  
Coleção Brasil Visto do Espaço  
Embrapa, 2000



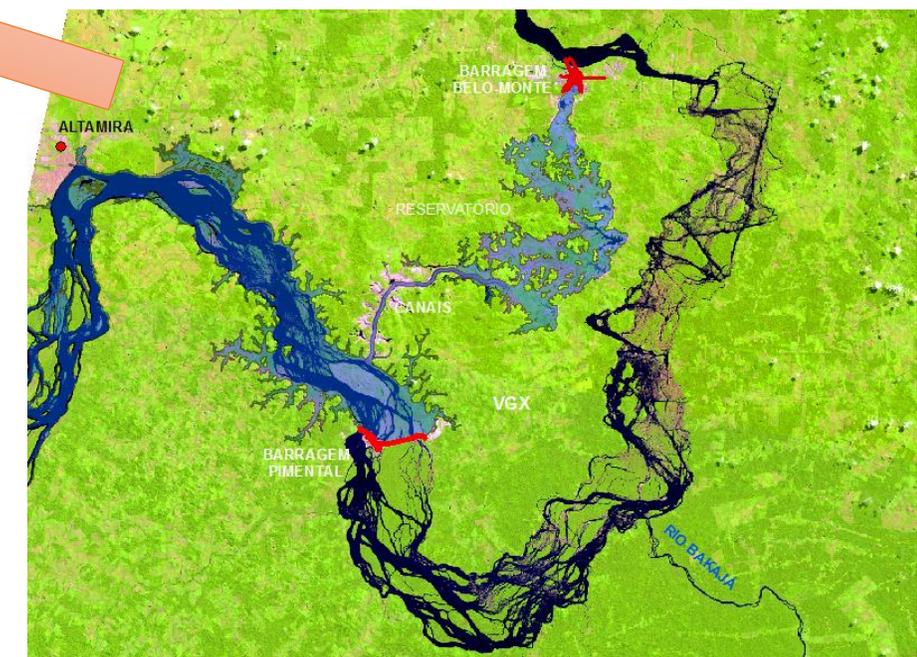


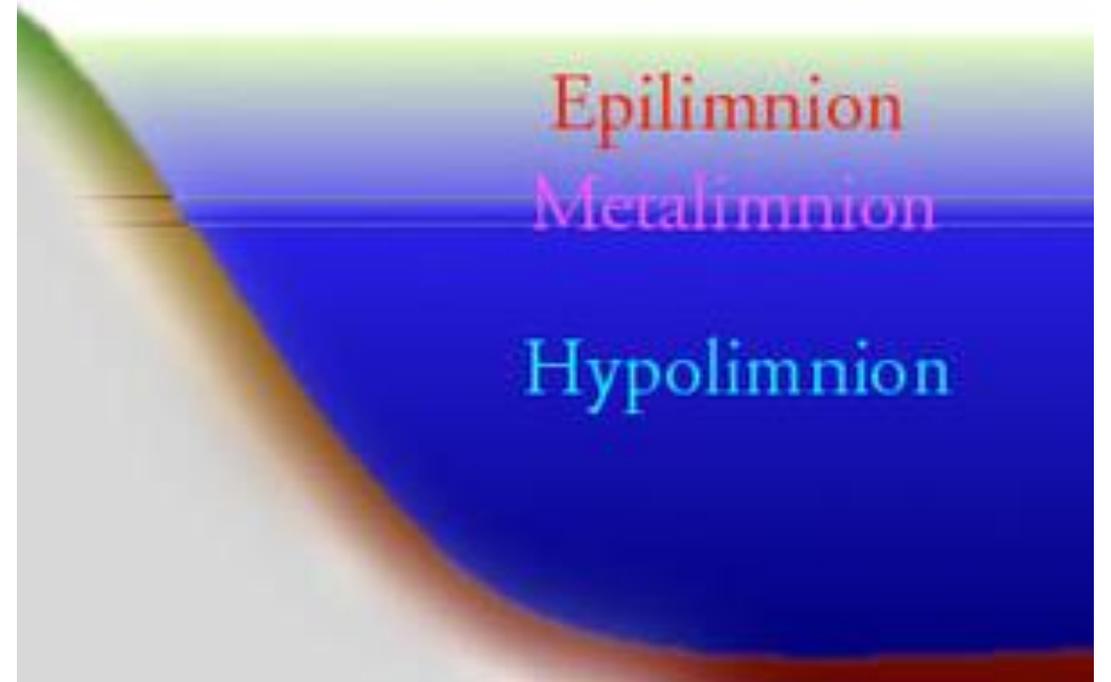
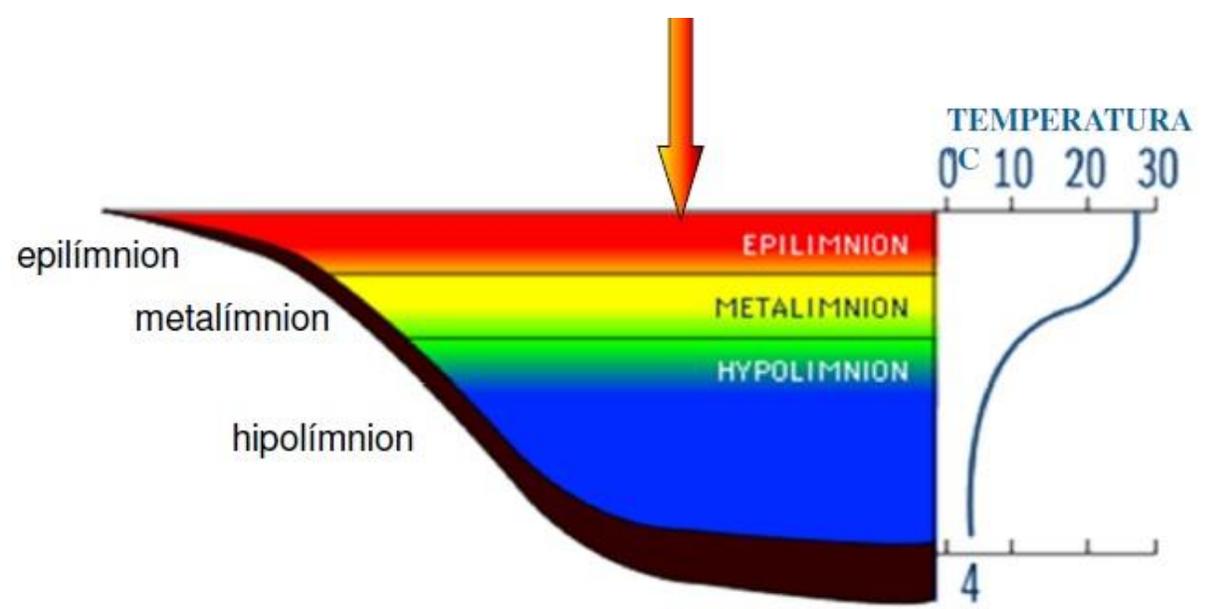
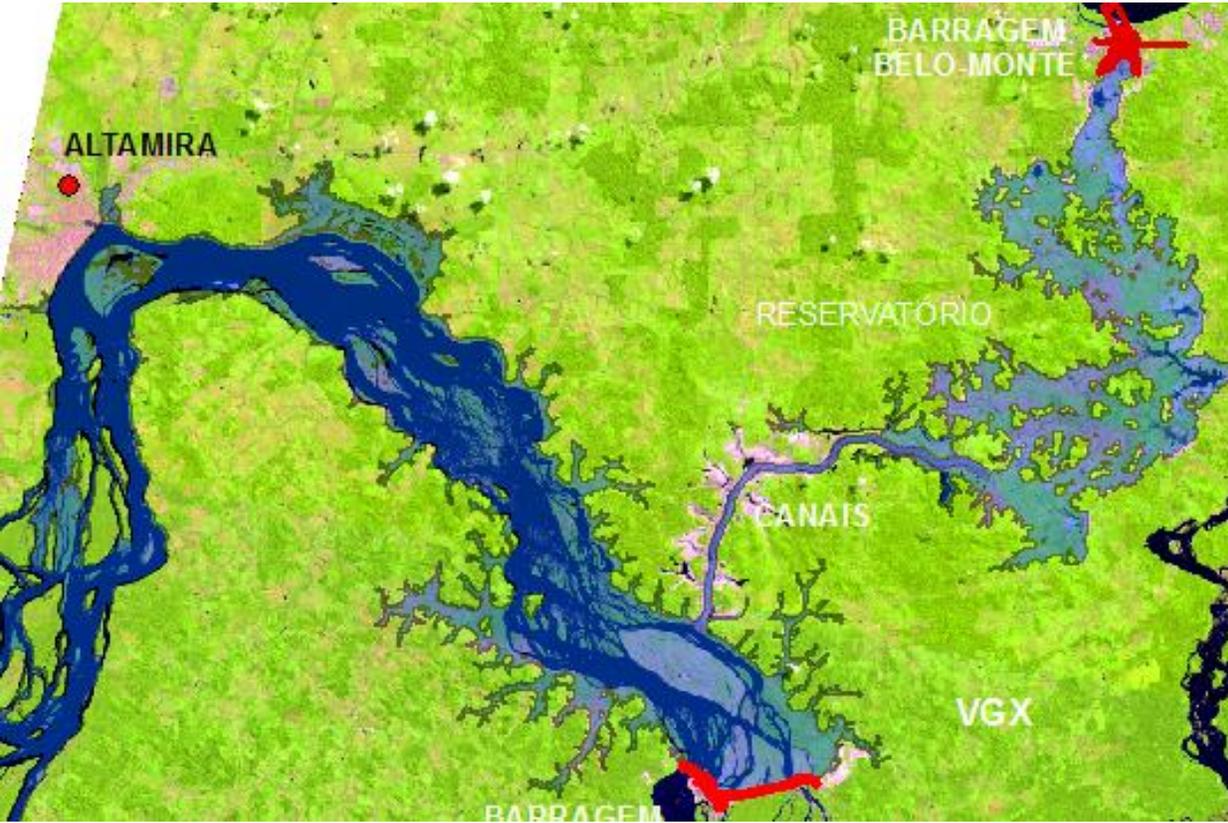






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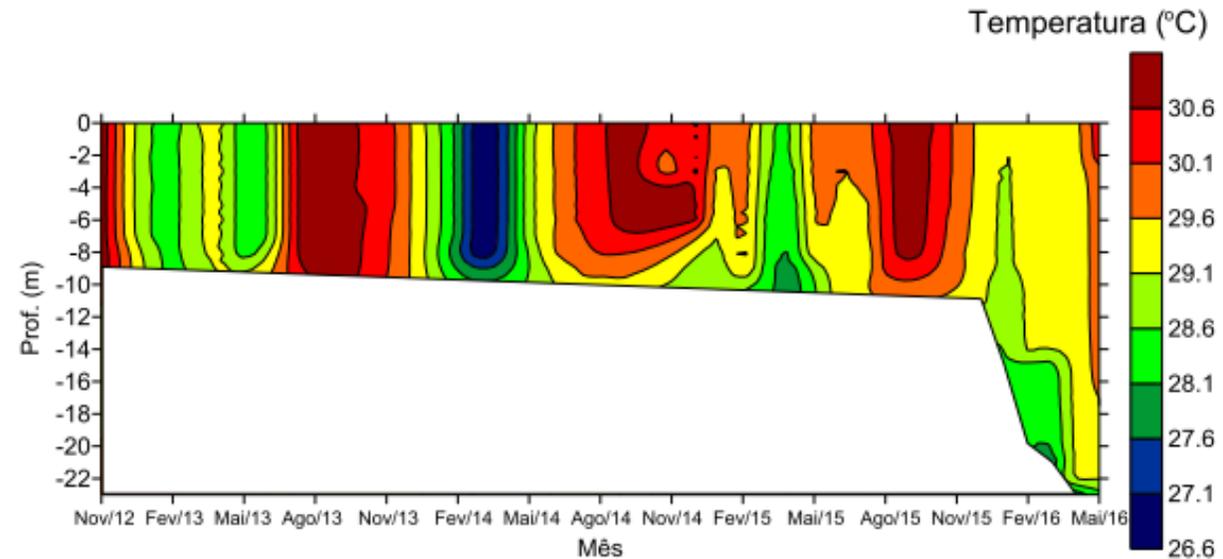


Figura 11.4.1 - 24 – Gráficos de isolinhas de temperatura registrada no rio Xingu, no ponto de coleta RX 03, entre novembro de 2012 e maio de 2016, no âmbito do monitoramento limnológico do PBA da UHE Belo Monte.

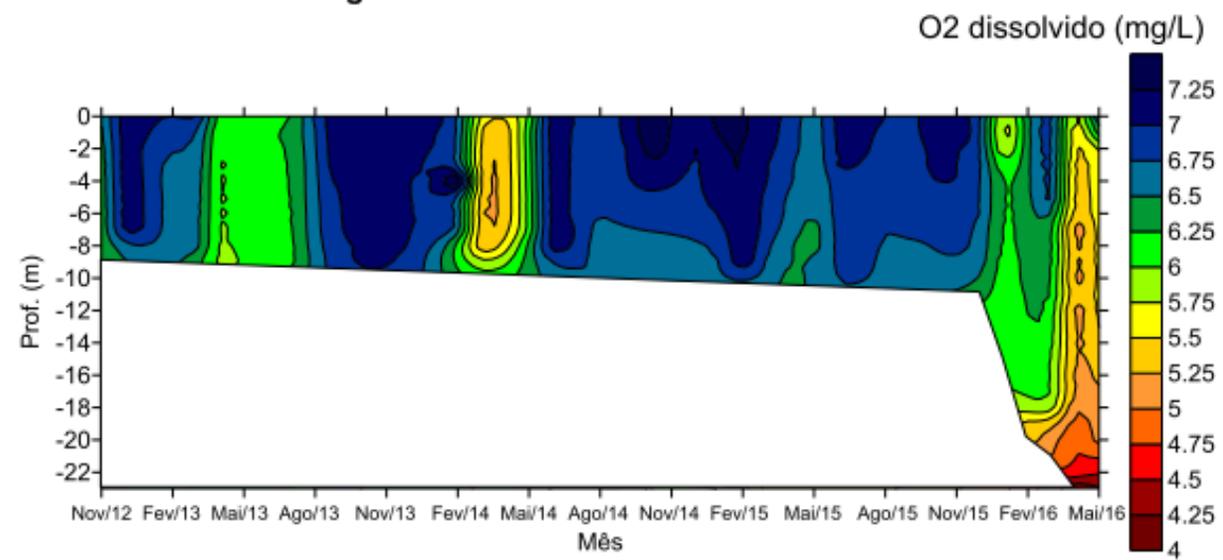
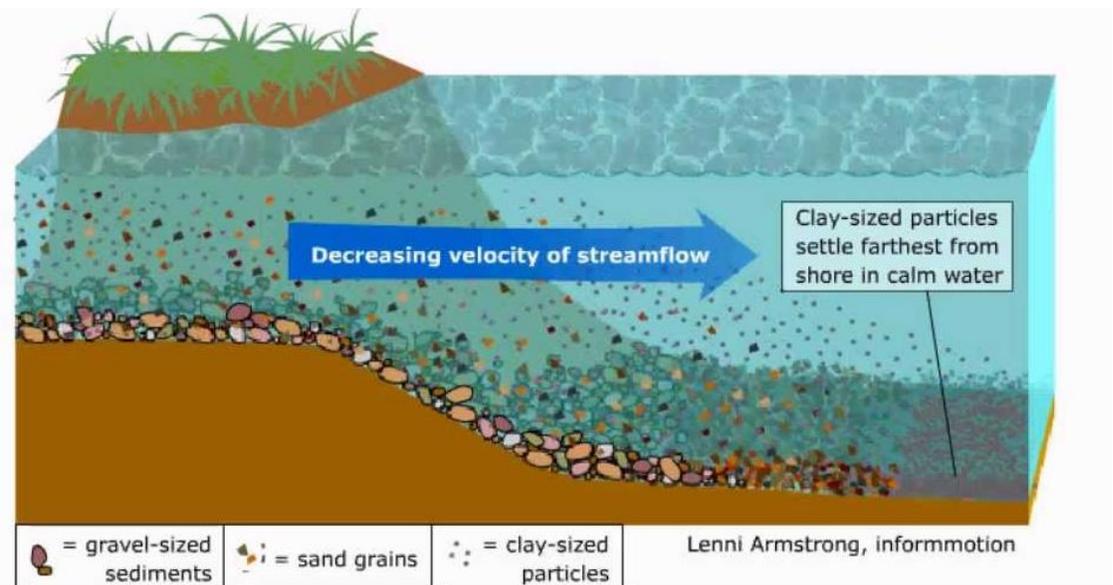
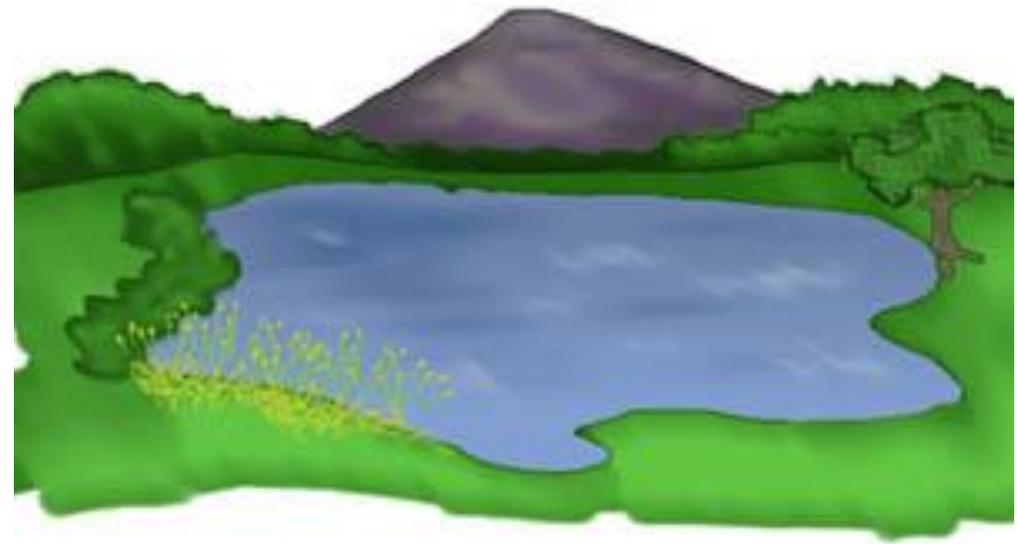
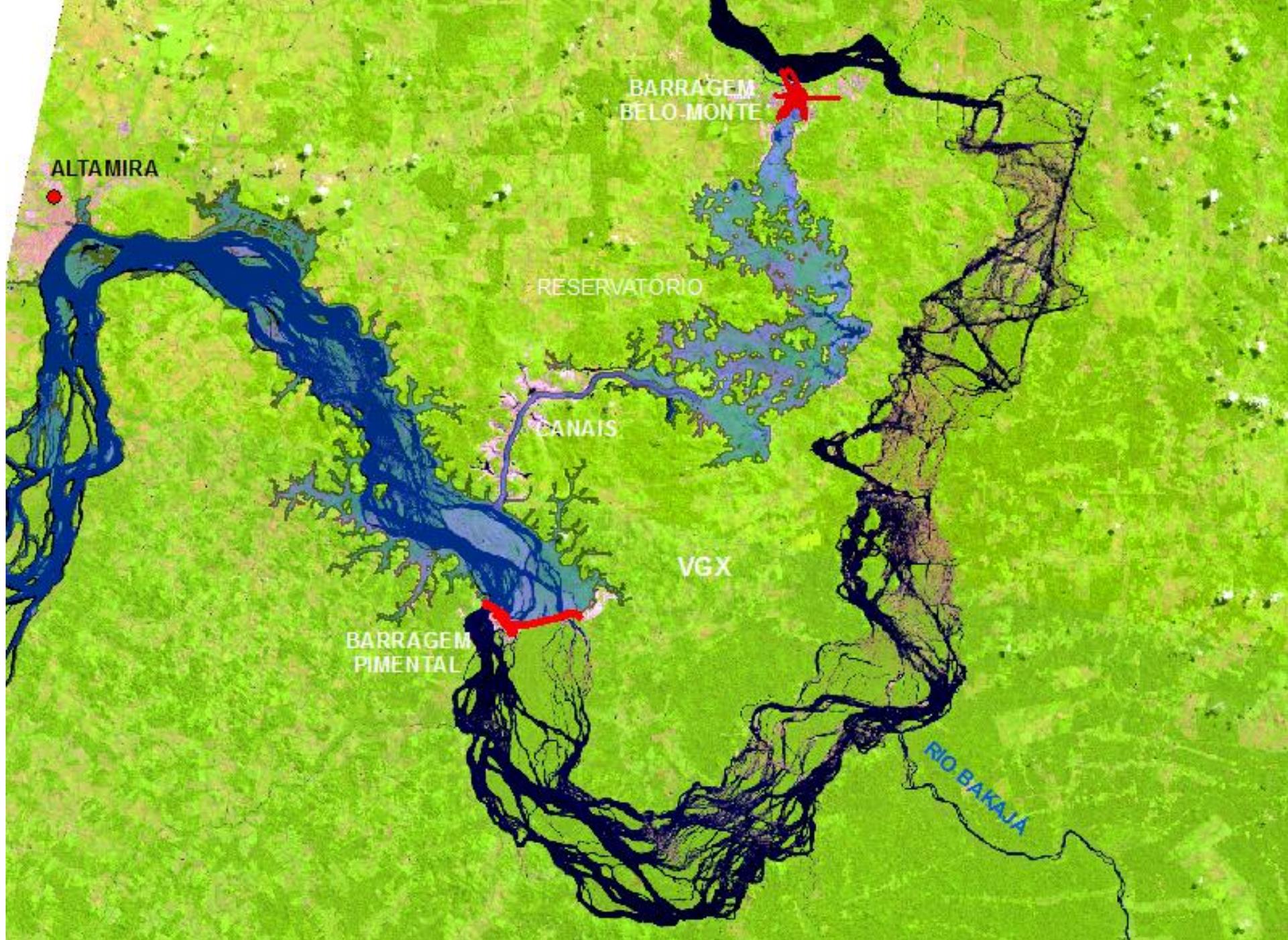


Figura 11.4.1 - 25 – Gráfico de isolinhas de concentração de oxigênio dissolvido registrado no rio Xingu, no ponto de coleta RX 03, entre novembro de 2012 e maio de 2016, no âmbito do monitoramento limnológico do PBA da UHE Belo Monte.





ALTAMIRA

BARRAGEM  
BELO MONTE

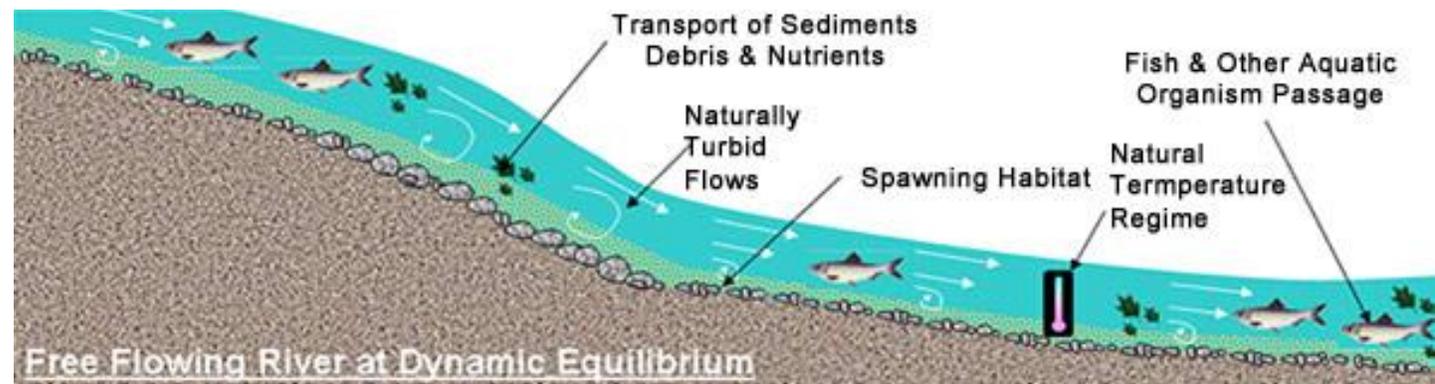
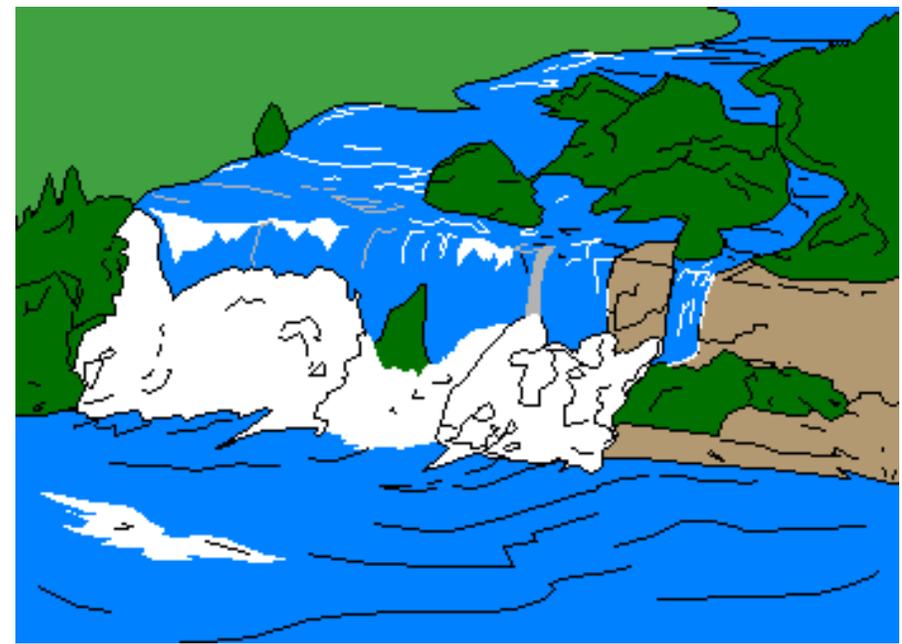
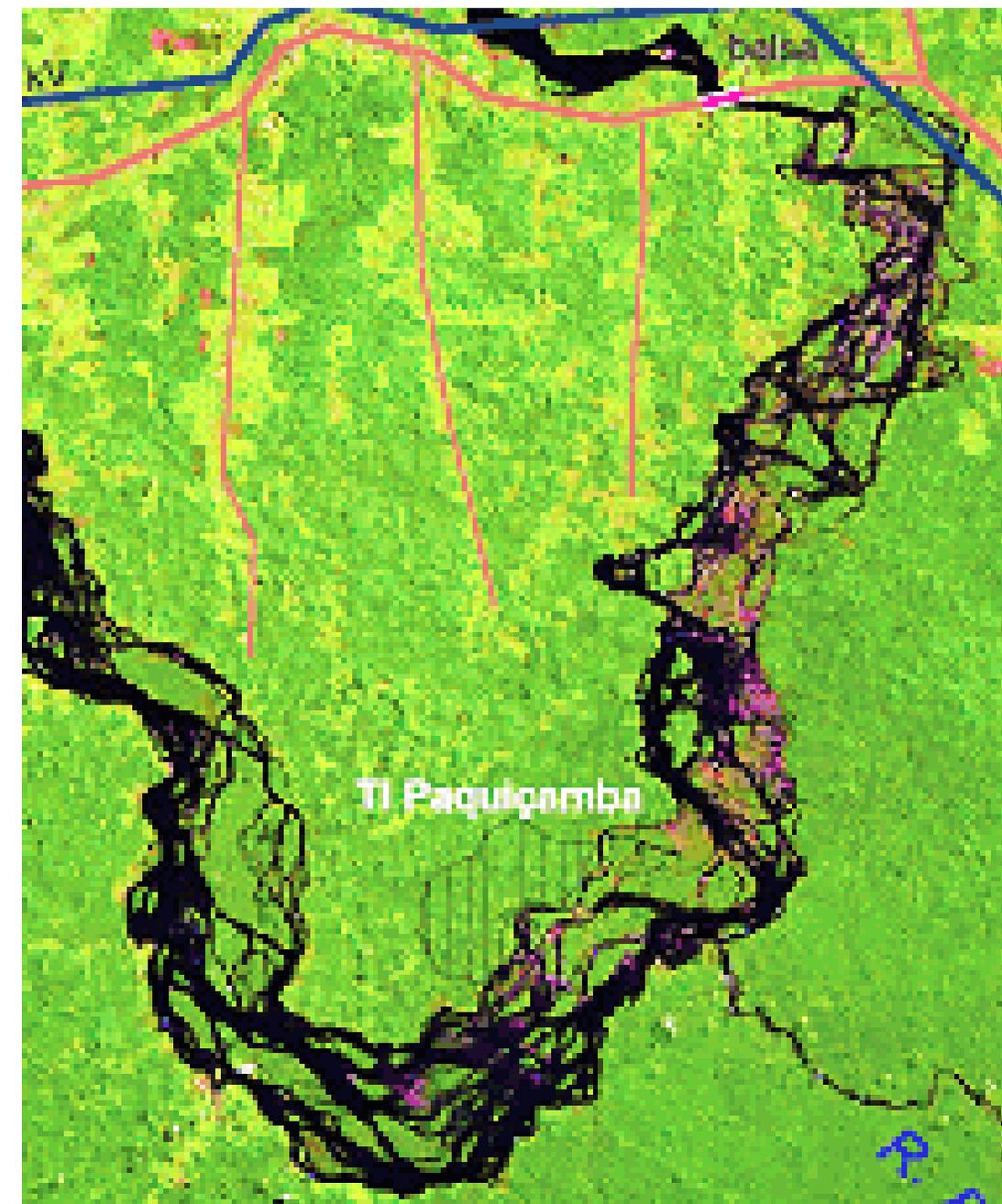
RESERVATORIO

CANAIS

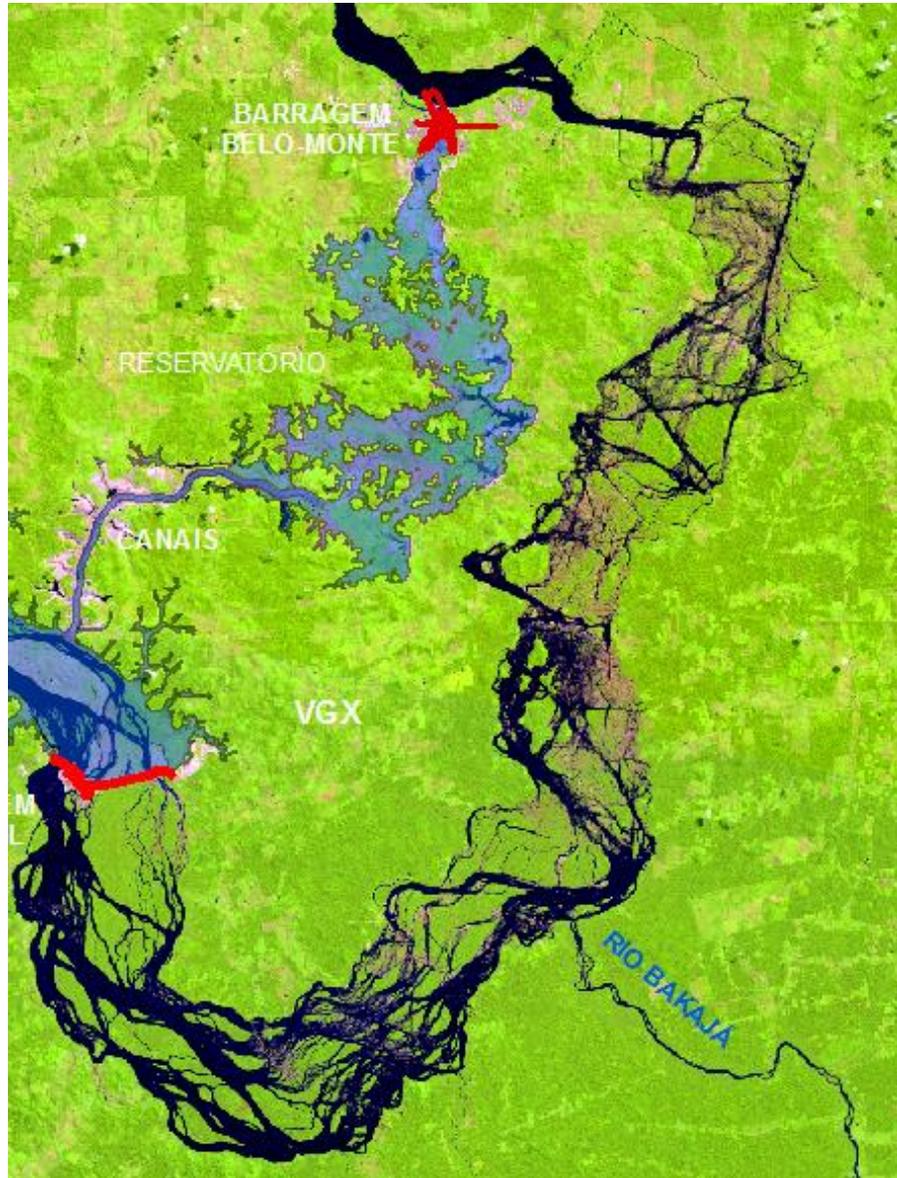
VGX

BARRAGEM  
PIMENTAL

RIO BAKAJÁ



# Vazão controlada



## UPSTREAM IMPACTS\*

Reduced:  
Natural Function, Water Quality, Oxygen, Turbid Flow, Circulation, Available Habitat  
Rivers ability to adjust horizontally and vertically (reduced resilience to change)

Increased:  
Pollutant Accumulation, Stratification, Temperatures, Algae Blooms

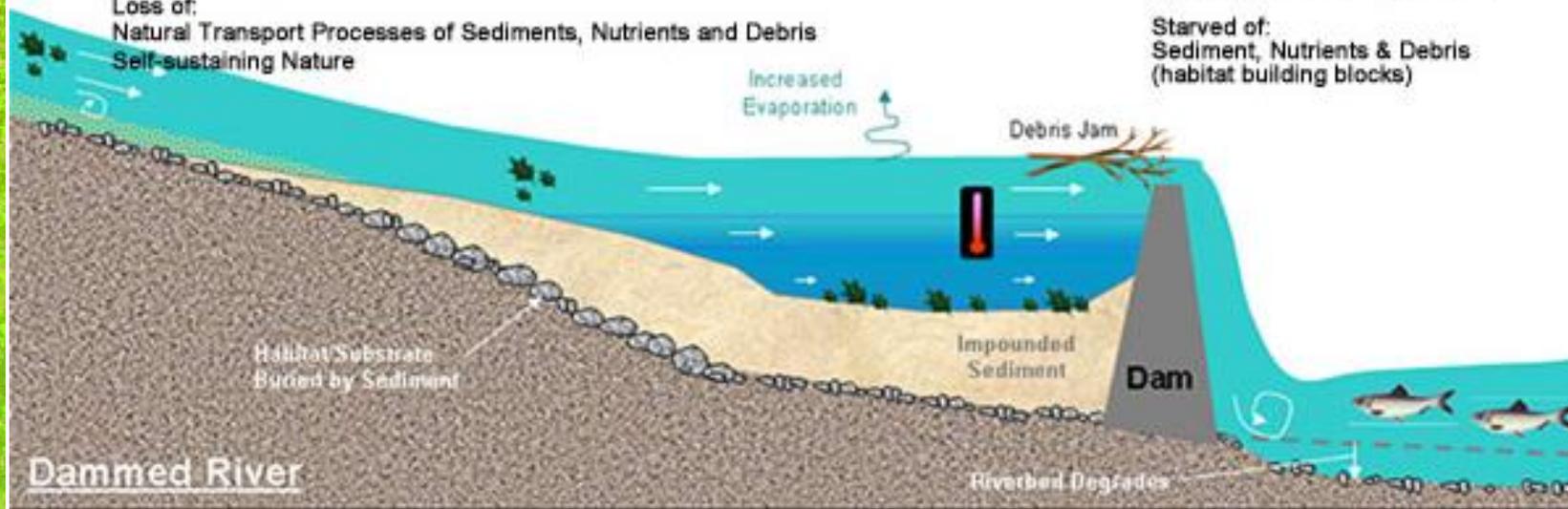
Loss of:  
Natural Transport Processes of Sediments, Nutrients and Debris  
Self-sustaining Nature

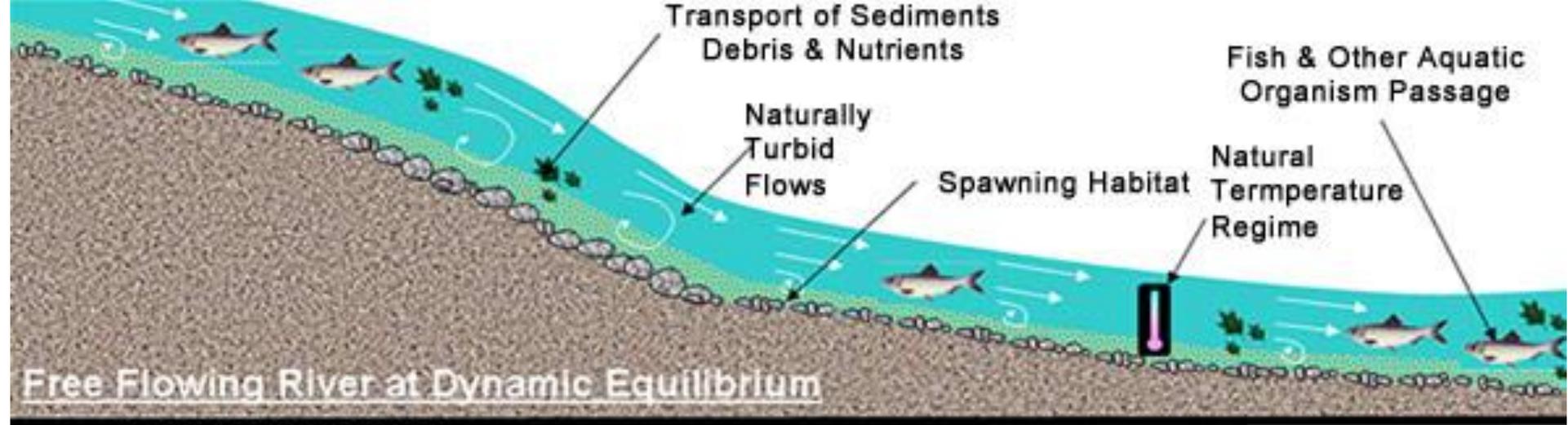
## DOWNSTREAM IMPACTS\*

Reduced:  
Water Quality & Riverbed Elevation

Altered:  
Flow Regime & Temperatures

Starved of:  
Sediment, Nutrients & Debris  
(habitat building blocks)





**UPSTREAM IMPACTS\***

Reduced:  
Natural Function, Water Quality, Oxygen, Turbid Flow, Circulation, Available Habitat  
Rivers ability to adjust horizontally and vertically (reduced resilience to change)

Increased:  
Pollutant Accumulation, Stratification, Temperatures, Algae Blooms

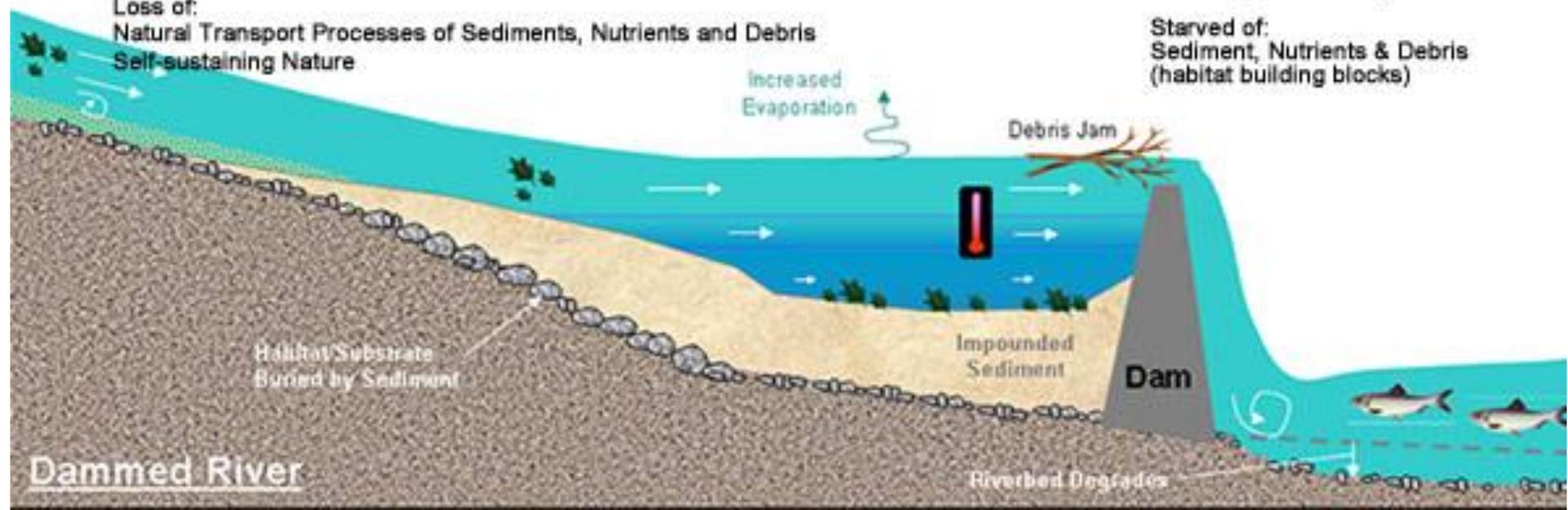
Loss of:  
Natural Transport Processes of Sediments, Nutrients and Debris  
Self-sustaining Nature

**DOWNSTREAM IMPACTS\***

Reduced:  
Water Quality & Riverbed Elevation

Altered:  
Flow Regime & Temperatures

Starved of:  
Sediment, Nutrients & Debris  
(habitat building blocks)



August 14, 1991

—*Illinois River*

—*Mississippi River*

*Missouri River*—

*St. Louis*



5 km



August 19, 1993



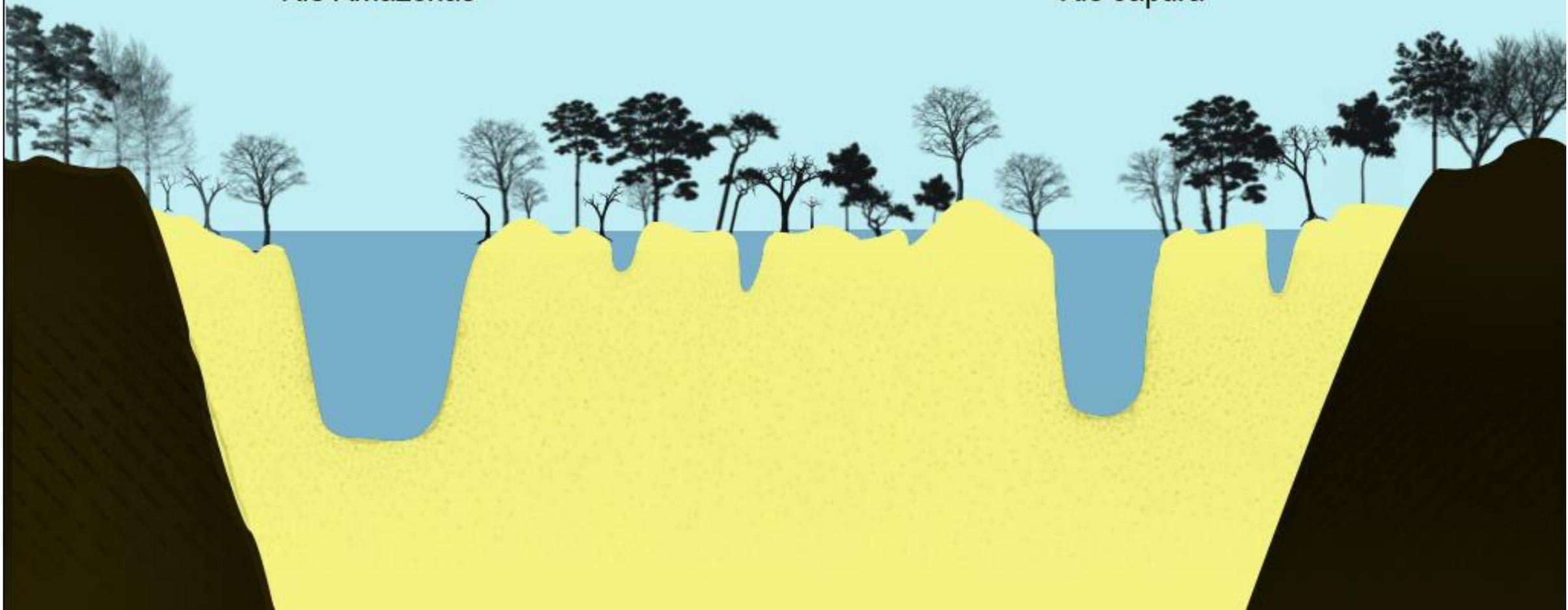
St. Louis



# Pulso de inundação na Reserva Mamirauá

Rio Amazonas

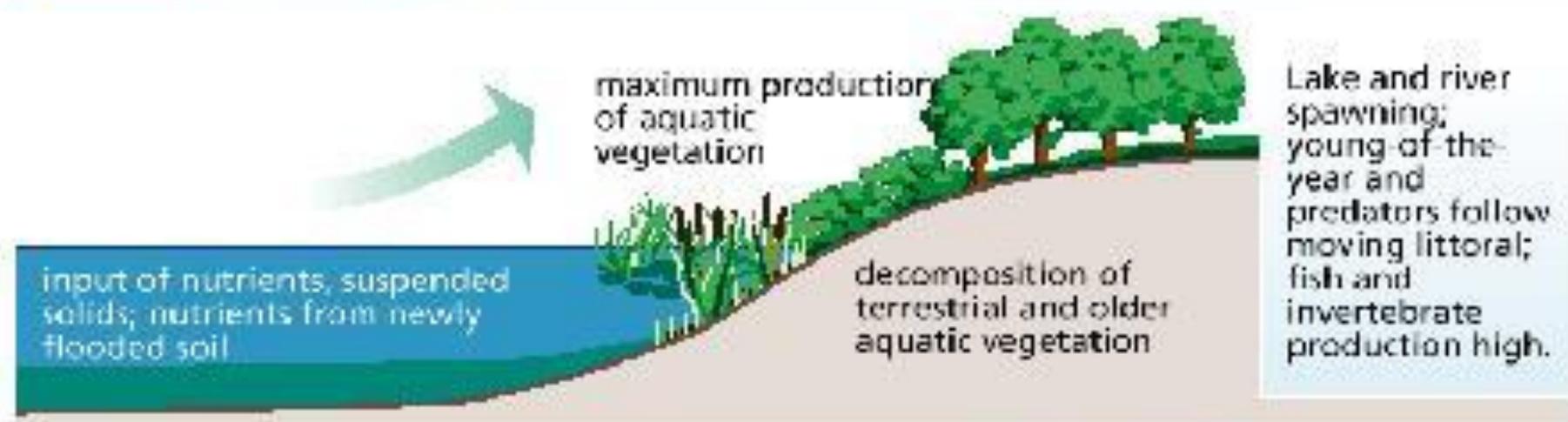
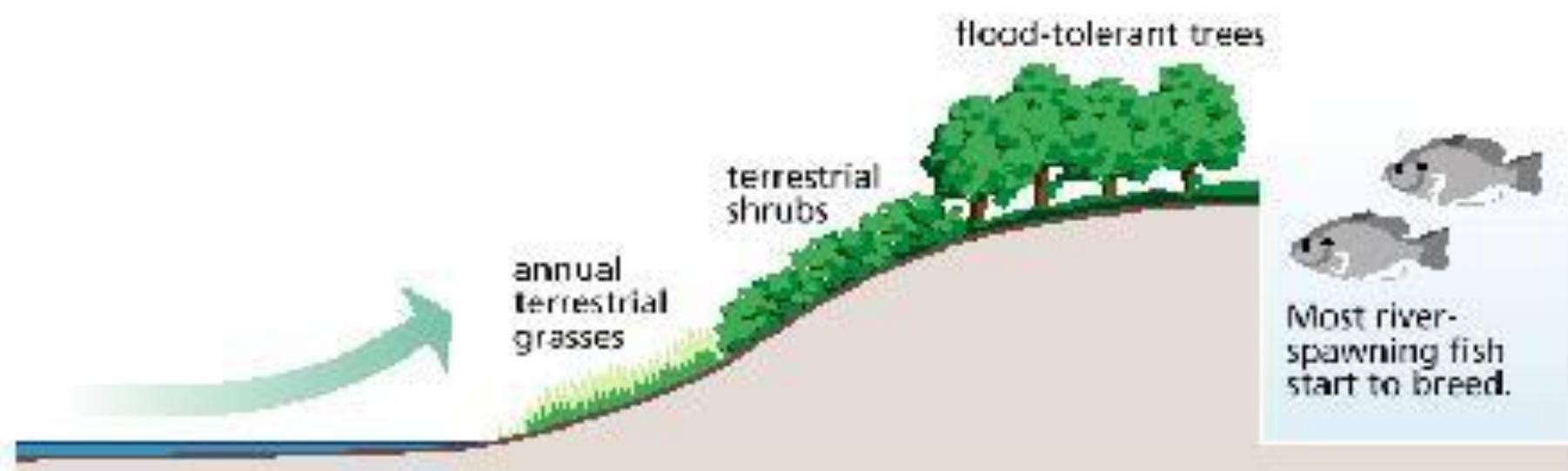
Rio Japurá

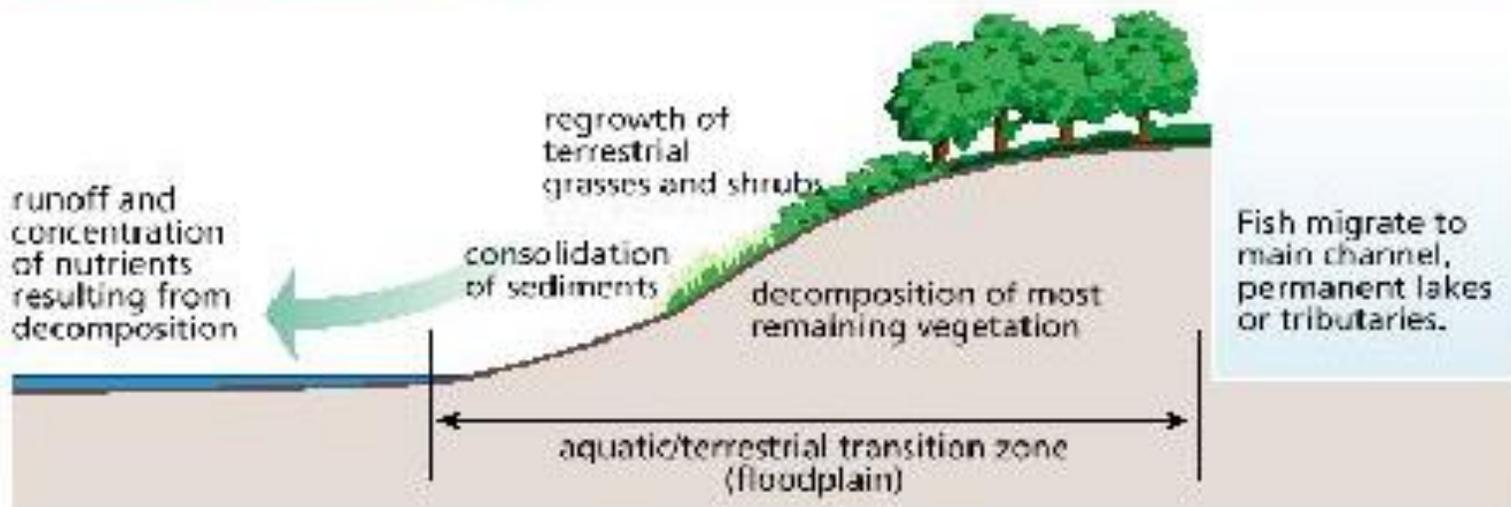
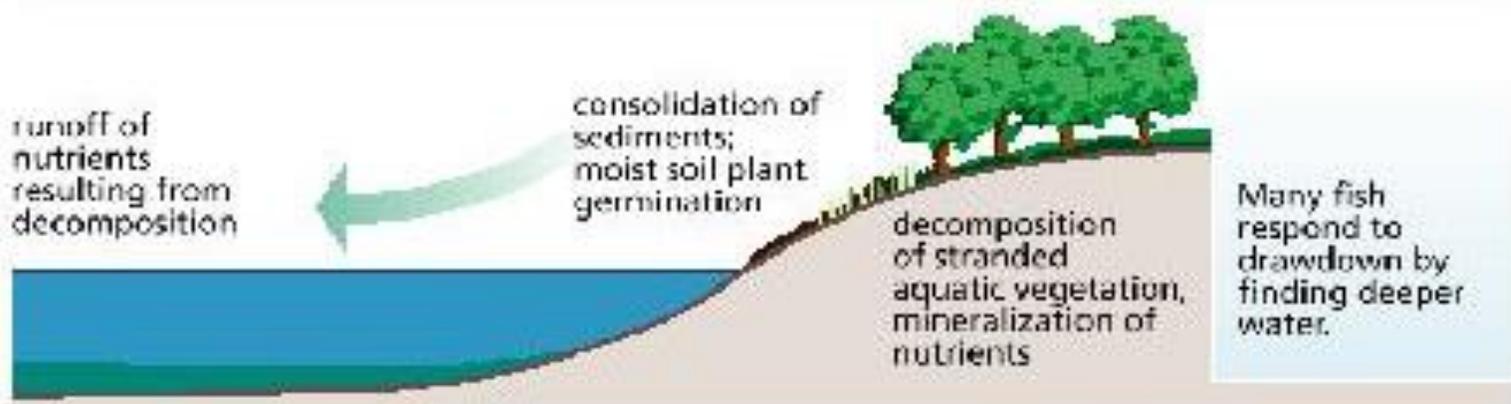
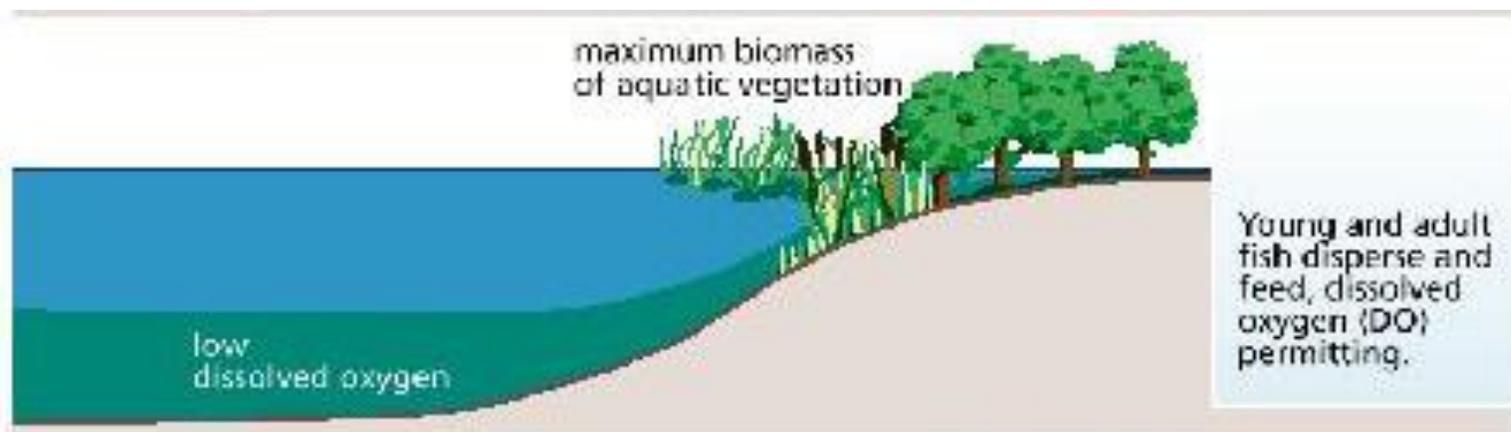


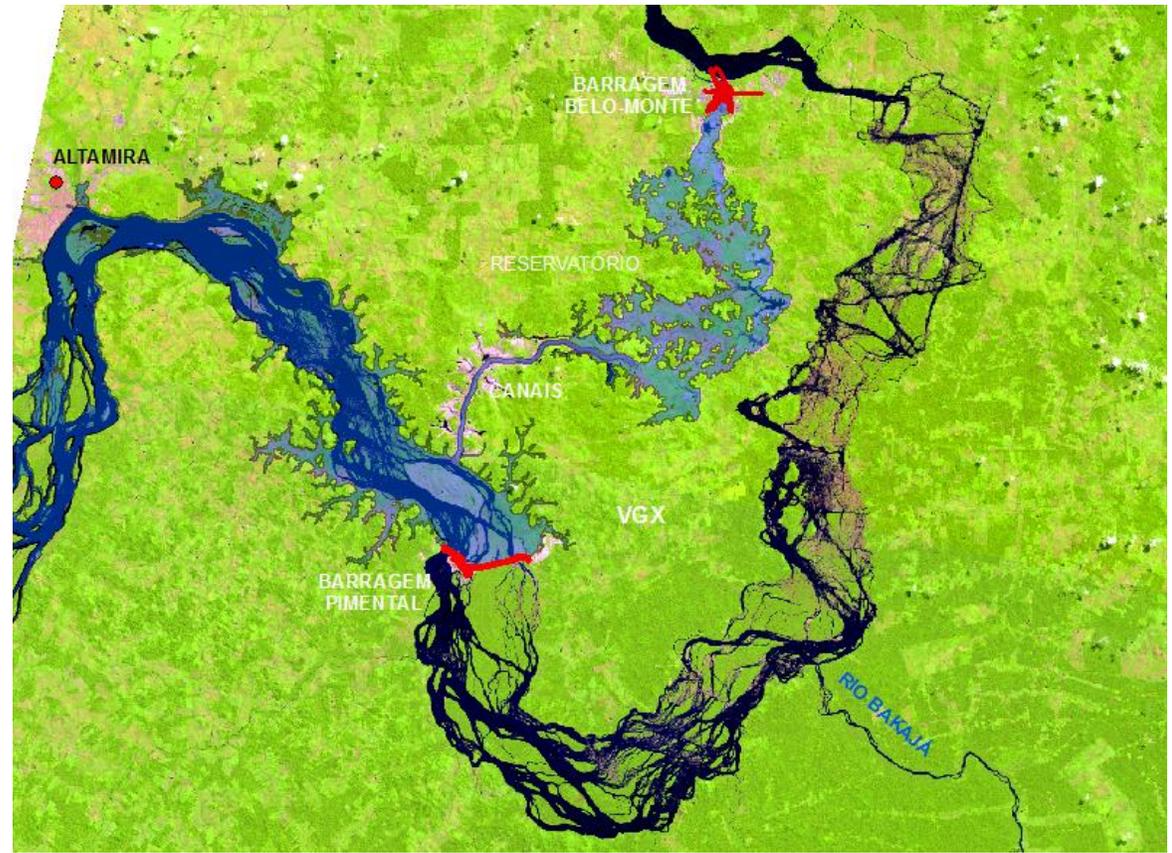
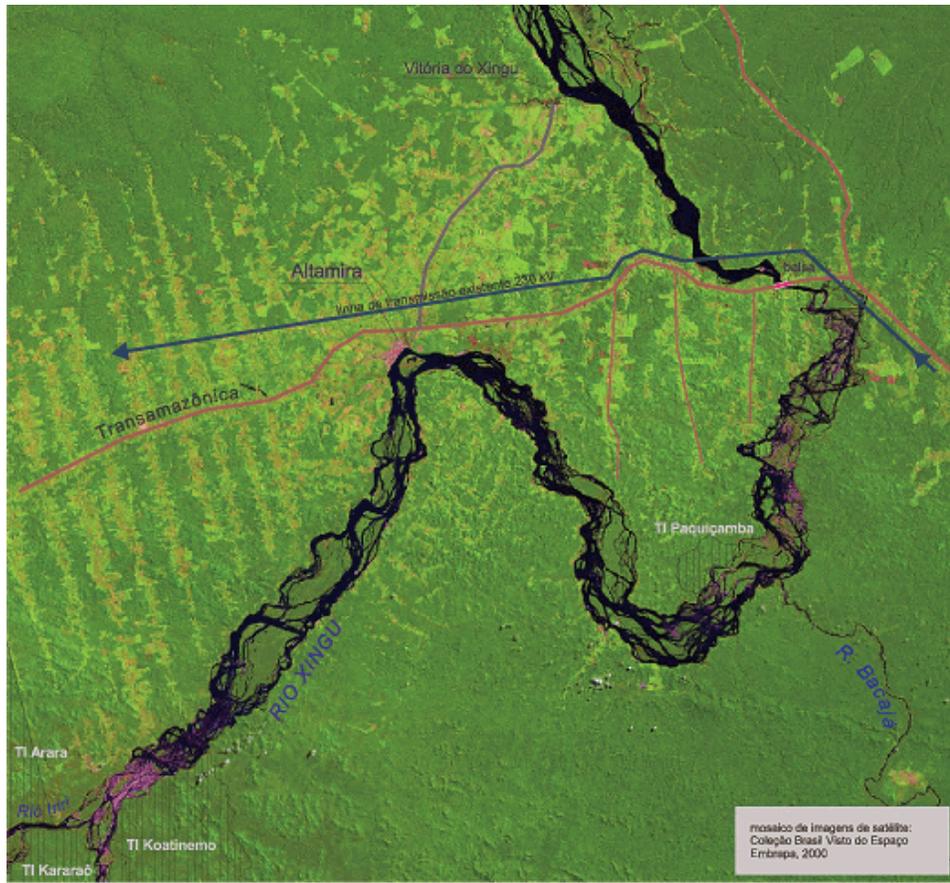






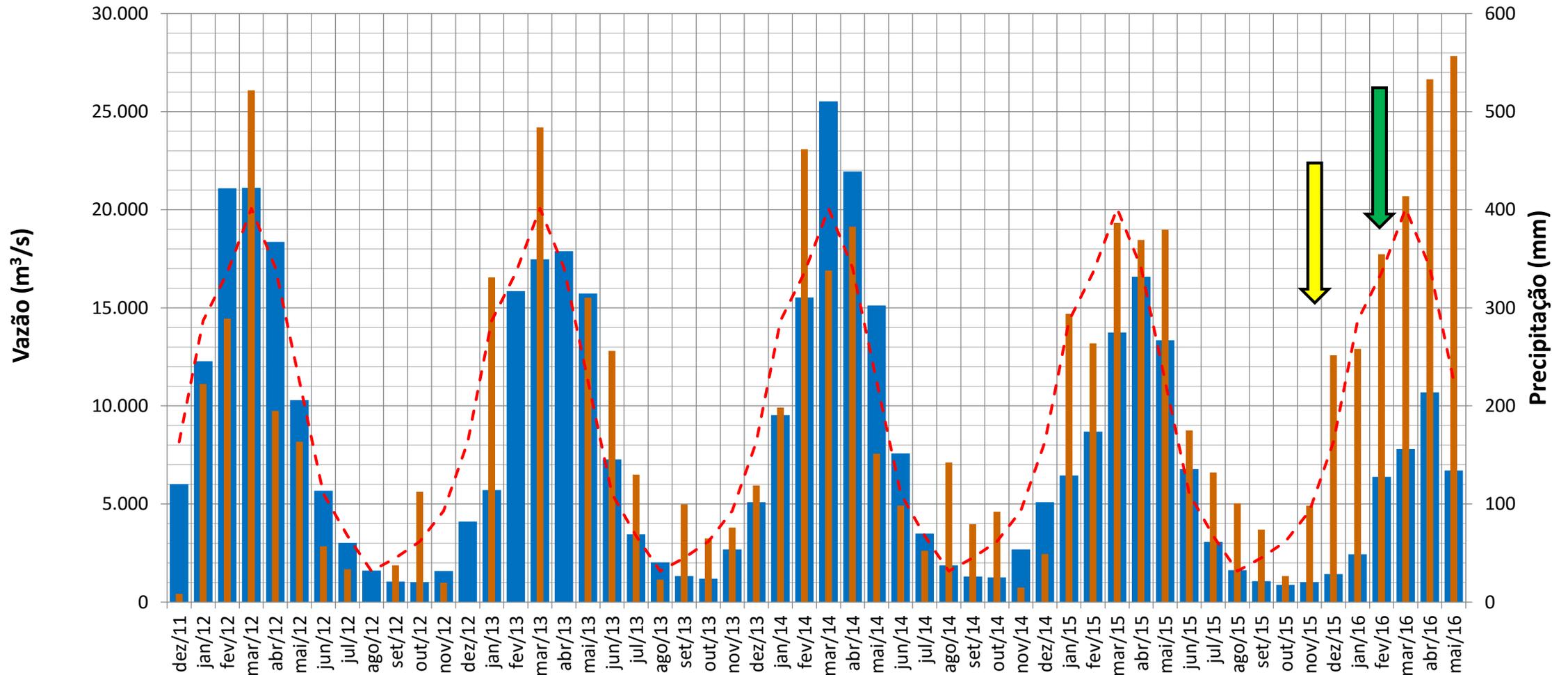






# Vazão Média Mensal x Precipitação Total Mensal

## ESTAÇÃO ALTAMIRA



VAZÃO MÉDIA MENSAL RIO XINGU (m3/s)

PRECIPITAÇÃO TOTAL MENSAL(mm)

MÉDIA HISTÓRICA INMET ALTAMIRA 1951 – 2011(mm)

INICIO DO ENCHIMENTO

FIM DO ENCHIMENTO



**Figura 11.1.2 - 6 – Evolução diária de cotas - Período (1) Pré-enchimento Reservatórios UHE Belo Monte - Estação Mrotidjã.**

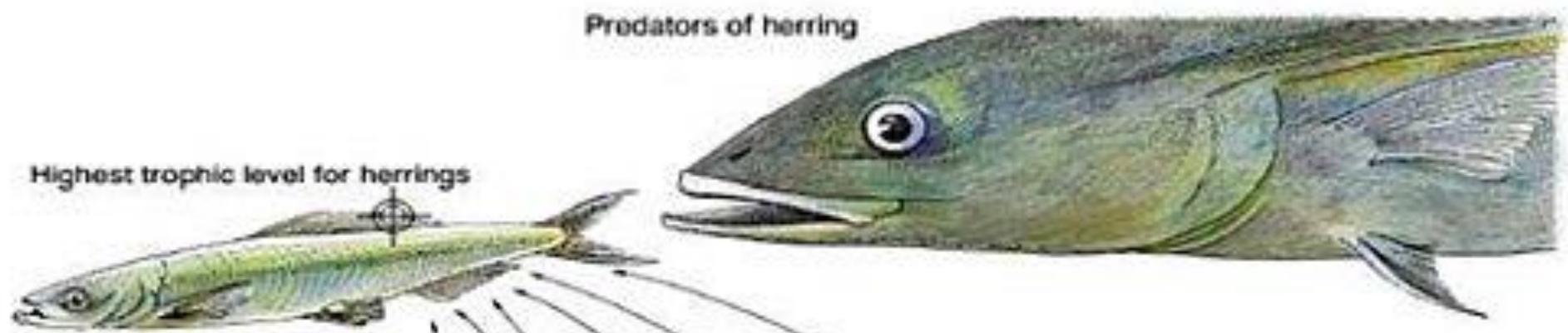


**Figura 11.1.2 - 7 – Evolução diária de cotas - Período (2) Enchimento e Pós-enchimento Reservatórios UHE Belo Monte - Estação Mrotidjã.**

Peixes

Predators of herring

Highest trophic level for herrings



Higher trophic levels



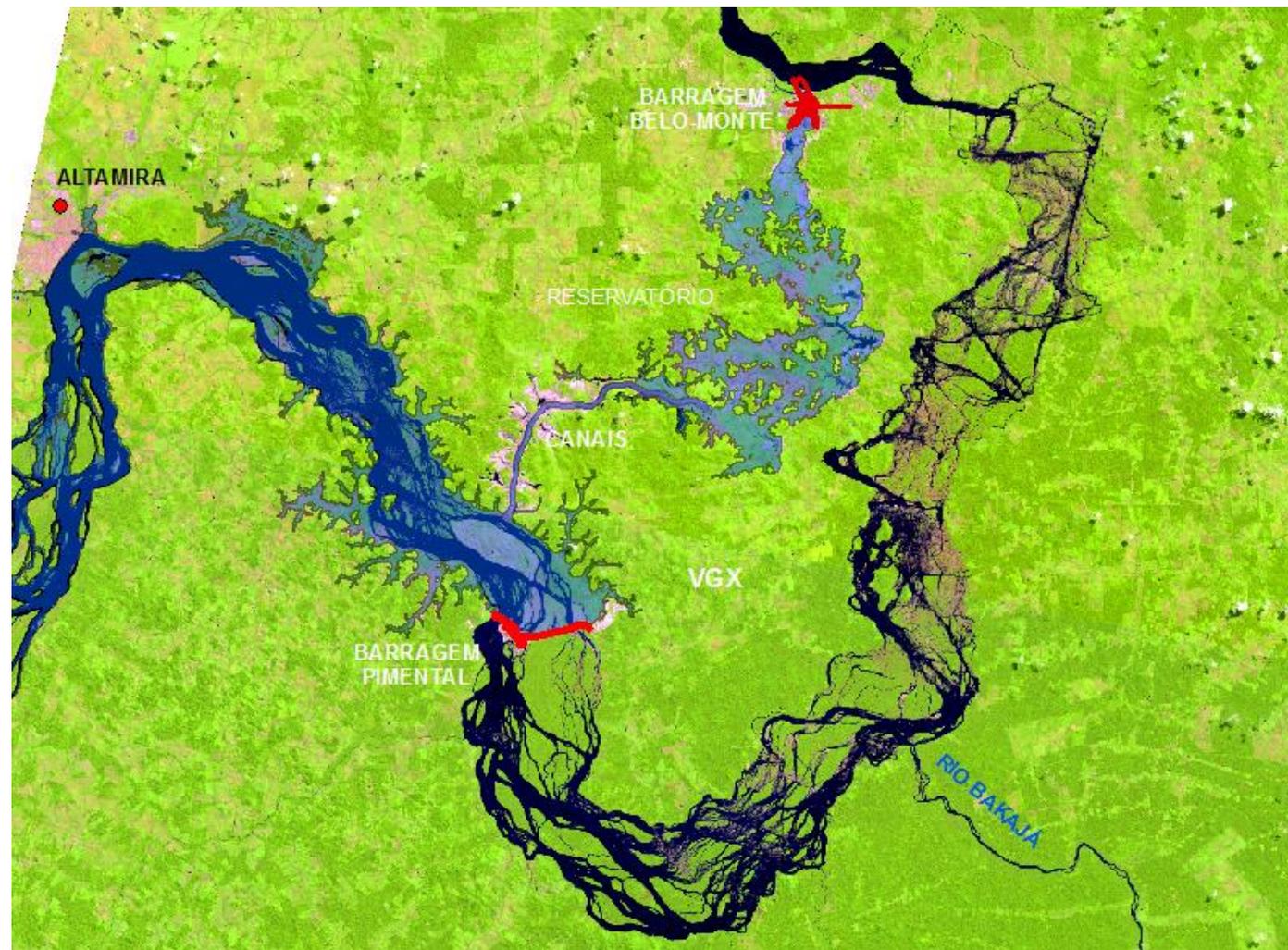
Second trophic level

First trophic level

Zooplankton

Phytoplankton

# Mais sensíveis

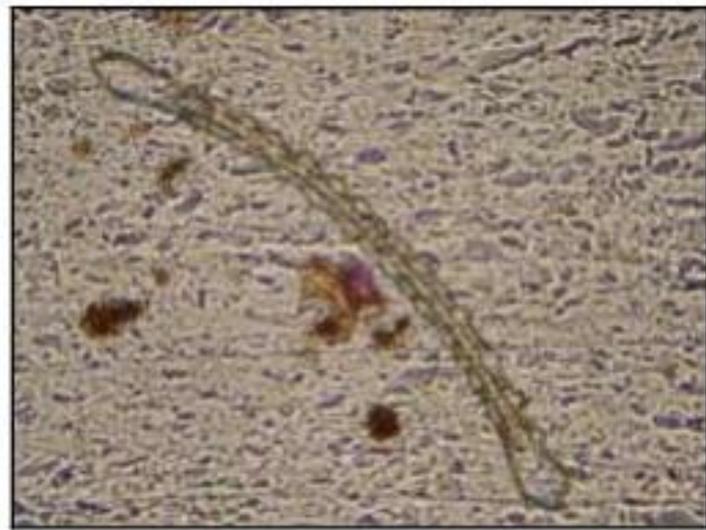




**Figura - 1 – Gênero *Aulacoseira*, Classe Bacillariophyceae.**



**Figura - 2 – Gênero *Actinella*, Classe Bacillariophyceae.**



**Figura - 3 – Gênero *Eunotia*, Classe Bacillariophyceae.**



**Figura - 4 – Gênero *Pinnularia*, Classe Bacillariophyceae.**

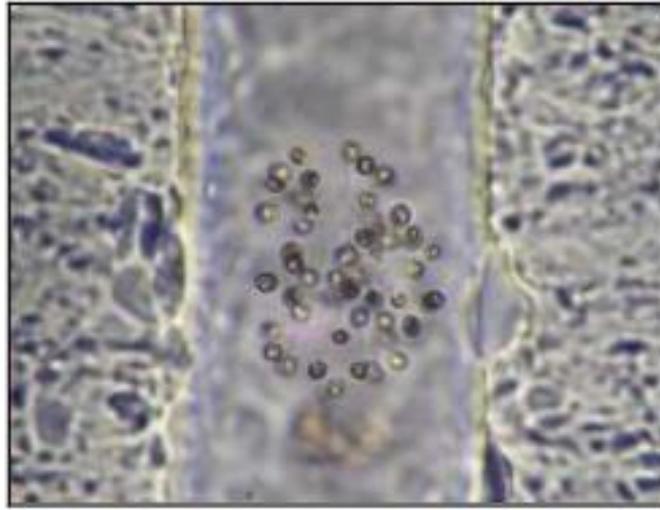


Figura - 7 - Gênero *Dictyosphaerium*, Classe Chlorophyceae.

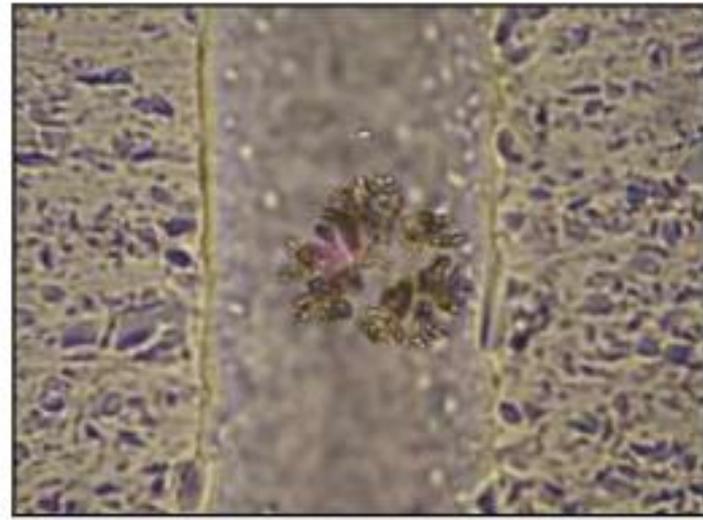


Figura - 8 - Gênero *Dimorphococcus*, Classe Chlorophyceae.

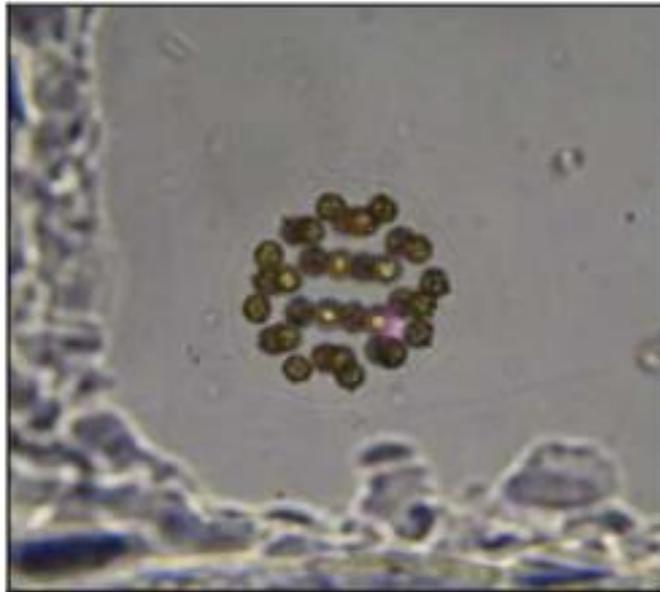


Figura - 9 - Gênero *Eudorina*, Classe Chlorophyceae.

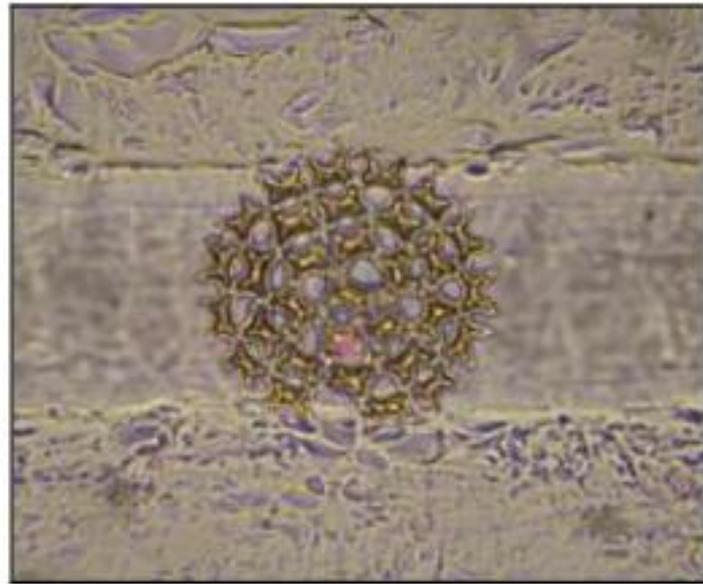


Figura - 10 - Gênero *Pediastrum*, Classe Chlorophyceae.

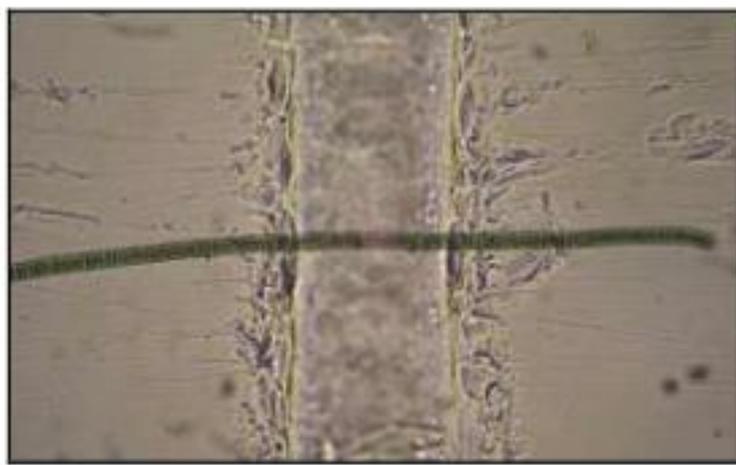


Figura - 13 – Gênero *Oscillatoria*, Classe Cyanophyceae.

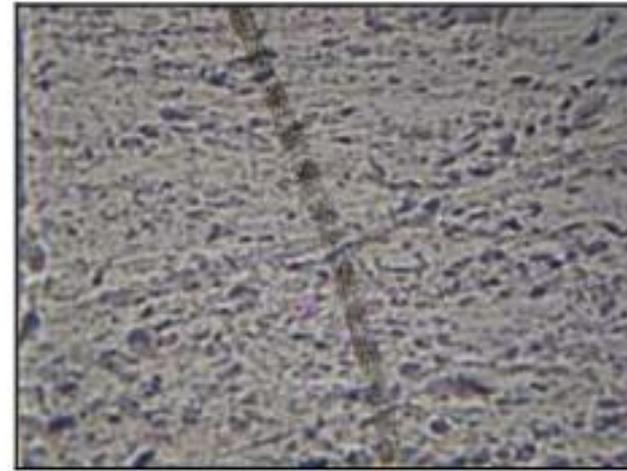


Figura - 14 – Gênero *Bambusina*, Classe Zygnematophyceae.



Figura - 15 – Gênero *Closterium*, Classe Zygnematophyceae.

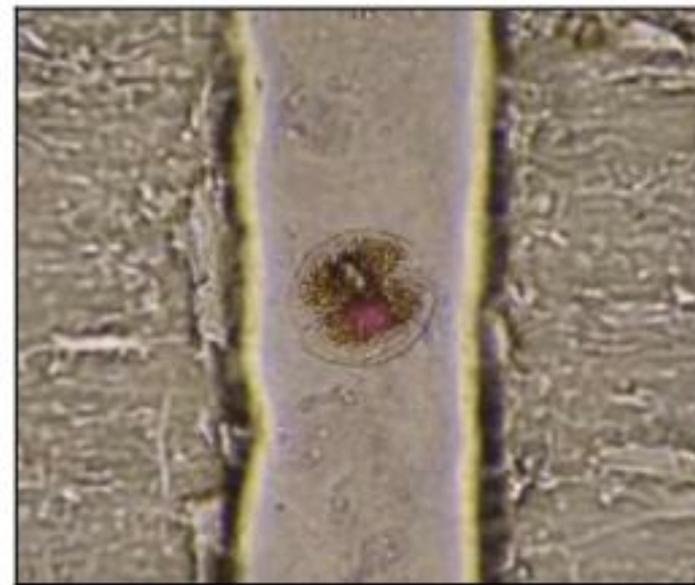
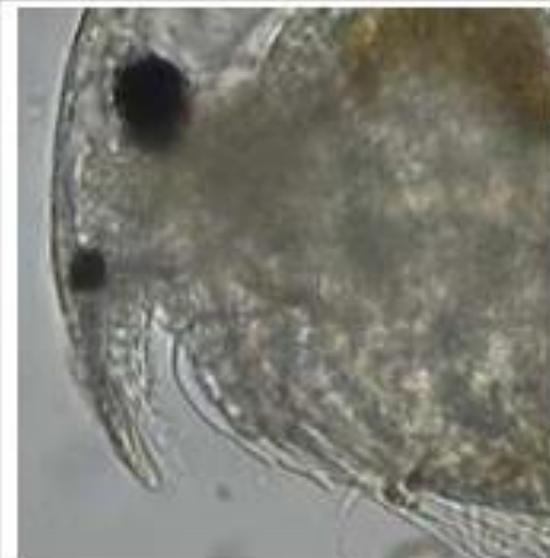


Figura - 16 – Gênero *Cosmarium*, Classe Zygnematophyceae.

# Cladoc



**Figura - 25 – *Kurzia polyspina* (Hudec, 2000).**



**Figura - 26 – *Ephemeroporus tridentatus* (Bergamin, 1931).**

# rotífero

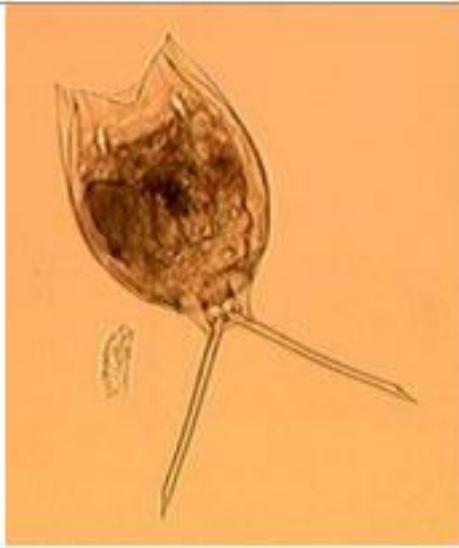


Figura - 28 – *Lecane leontina* (Turner, 1892).

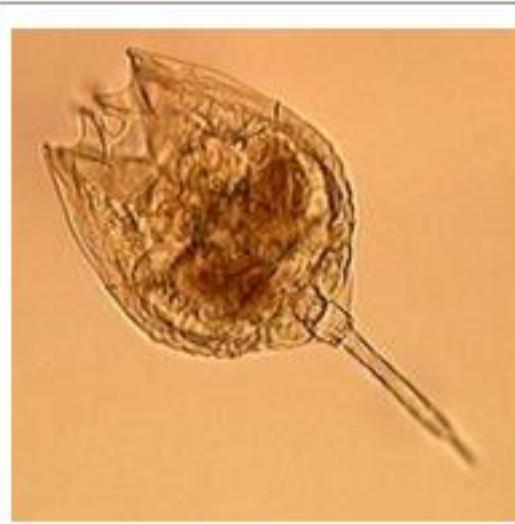


Figura - 29 – *Lecane quadridentata* (Ehrenberg, 1832).



Figura - 30 – *Brachionus brevispinus* (Daday, 1905).



Figura - 31 – *Lecane stenroosi* (Meissner, 1908).



Figura - 34 – Oligochaeta.



Figura - 35 – Chironomidae.



Figura - 36 – Ceratopogonidae.



Figura - 37 – Glossiphoniidae.



Figura - 38 – Polymitarcyidae.

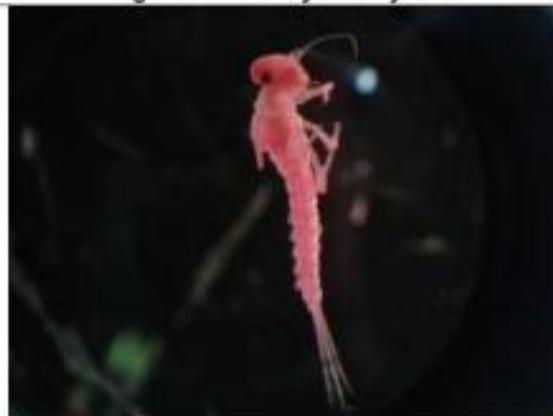
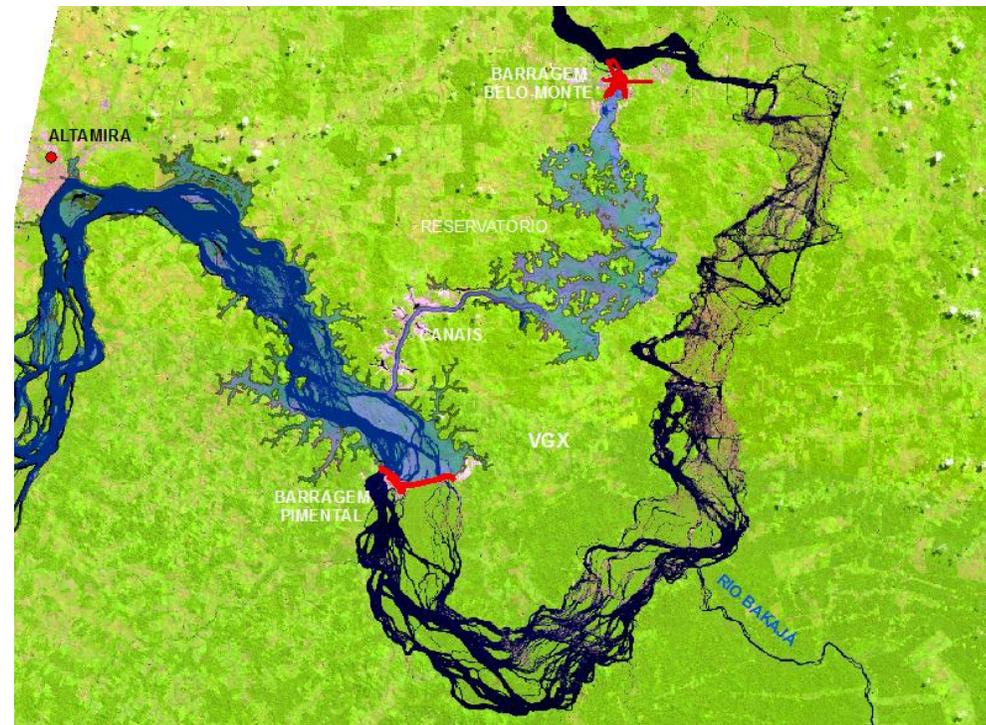
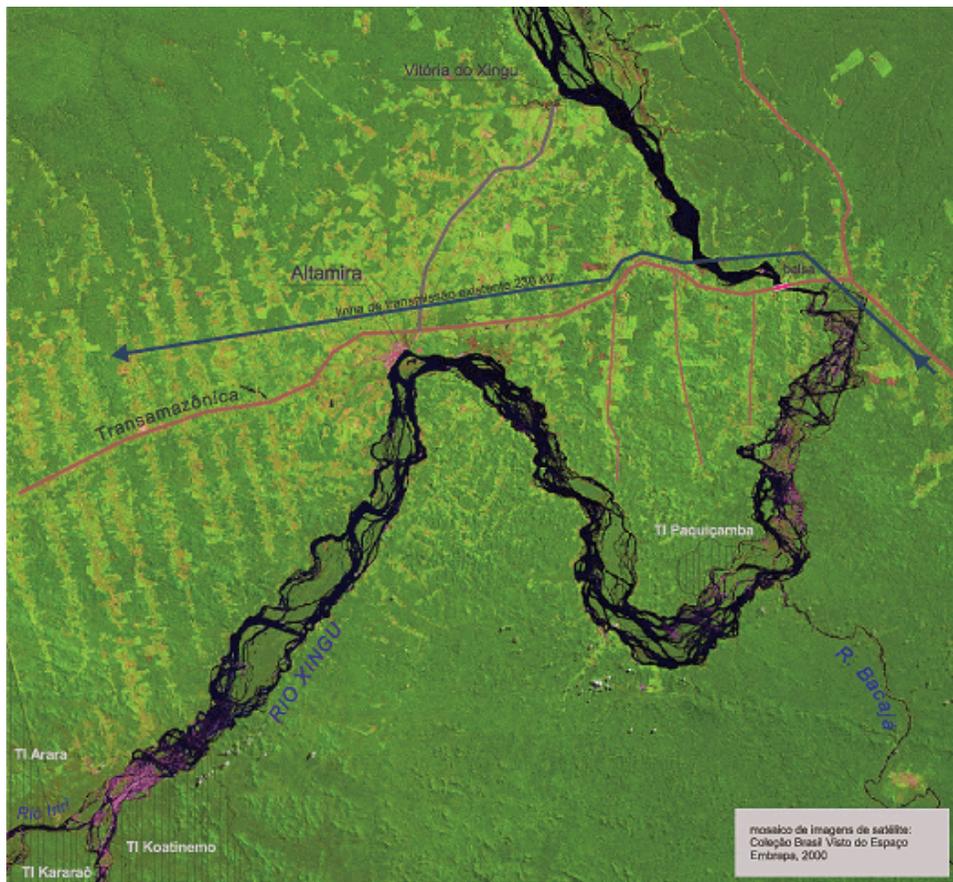
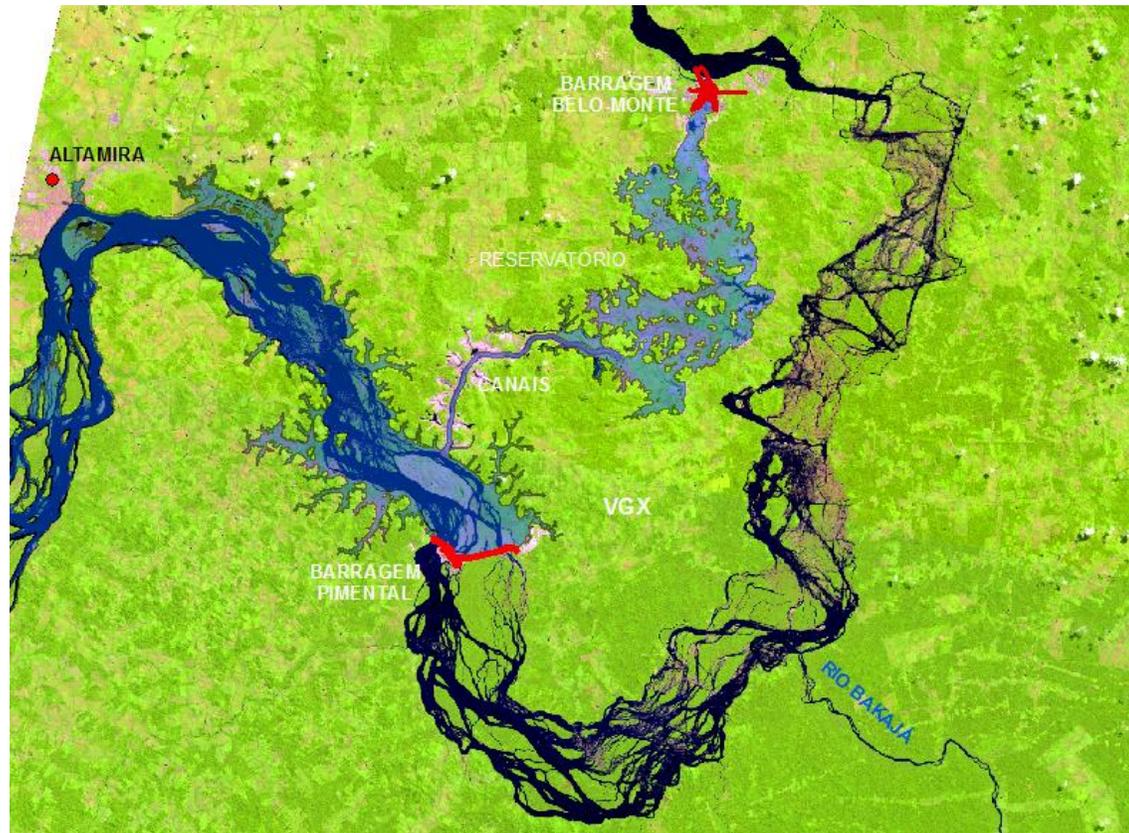


Figura - 39 – Baetidae.



- 16 campanhas
- 152.047 peixes em 408 espécies
- Igarapé, canal, pedral e praia – assembleias distintas
- Lagoa , remanso e igapó - parecida
- Trecho a jusante do rio Bacajá – ictiofauna bem distinta



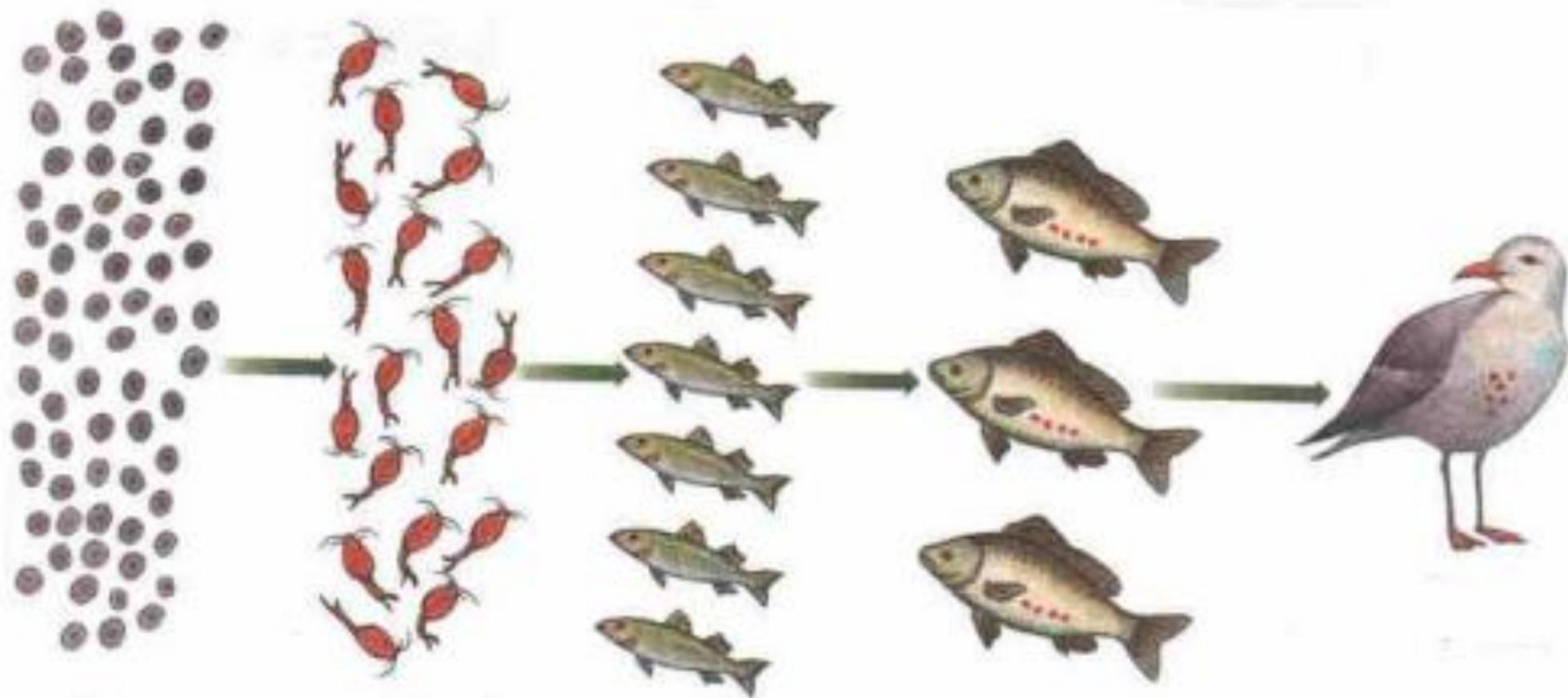


Fig. 4. Aumento da concentração de compostos químicos na cadeia alimentar - biomagnificação (retirado de Linhares e Gewandsznajder, 2003)



fidalgo - *Ageneiosus inermis*



tucunaré - *Cichla melaniae*



acará - *Geophagus altifrons*



piau - *Leporinus fasciatus*



amarelinho - *Baryancistrus xanthellus*



pacu branco - *Myloplus rubripinnis*



pescada branca - *Plagioscion squamosissimus*



aridua - *Semaprochilodus brama*



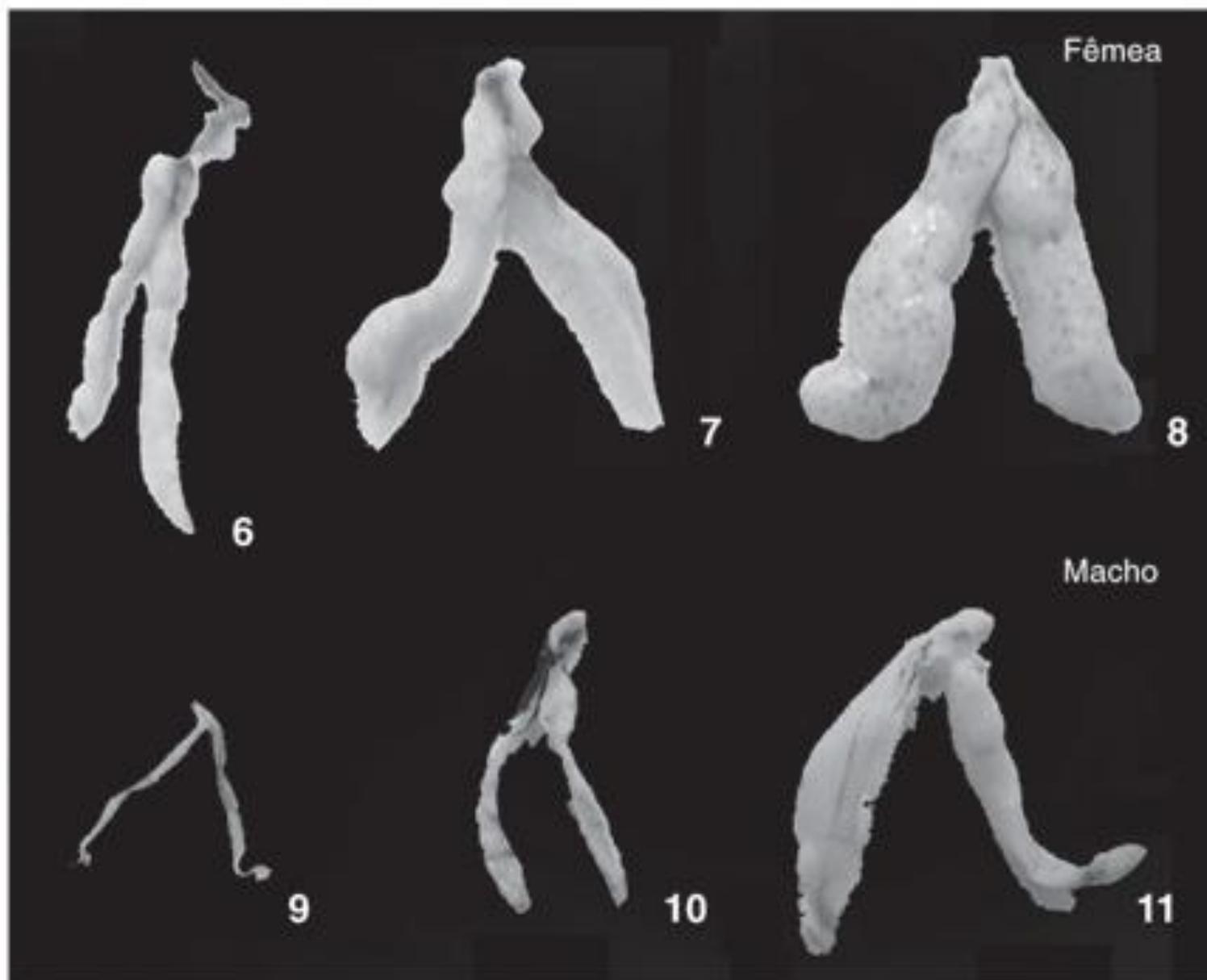
Curimatã - *Prochilodus nigricans*



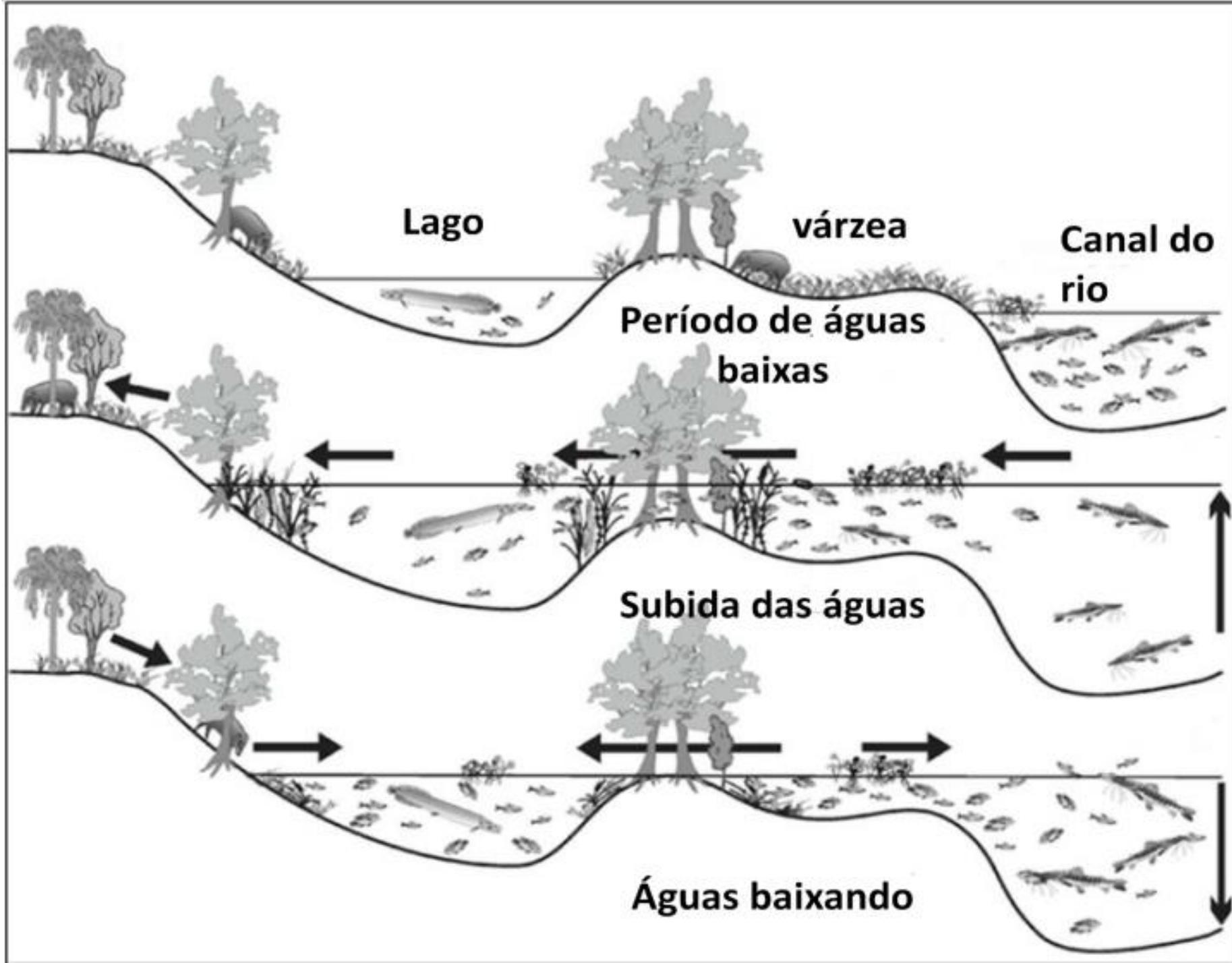
preto velho - *Ancistrus ranunculus*







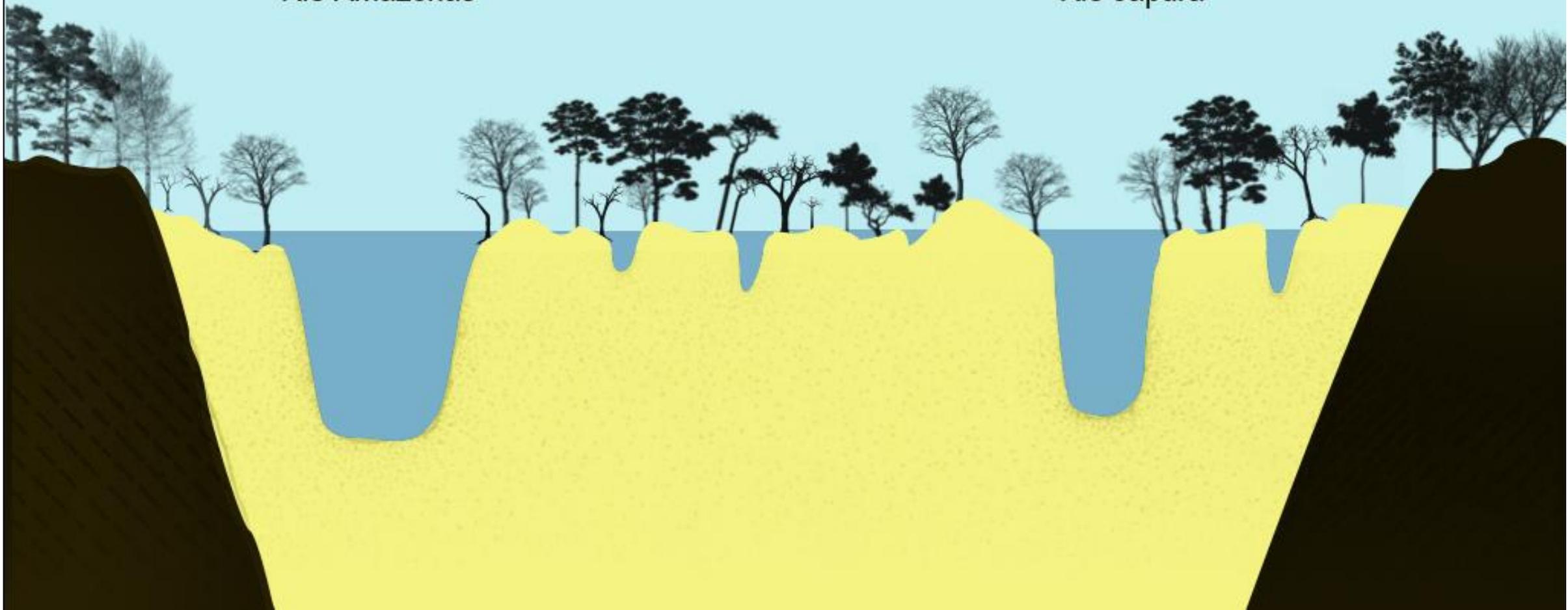
Figuras 6-11. Gônadas de fêmeas e machos de *S. fuscus*, representando os estádios de maturação inicial (6 e 9); intermediário (7 e 10) e maduro (8 e 11).

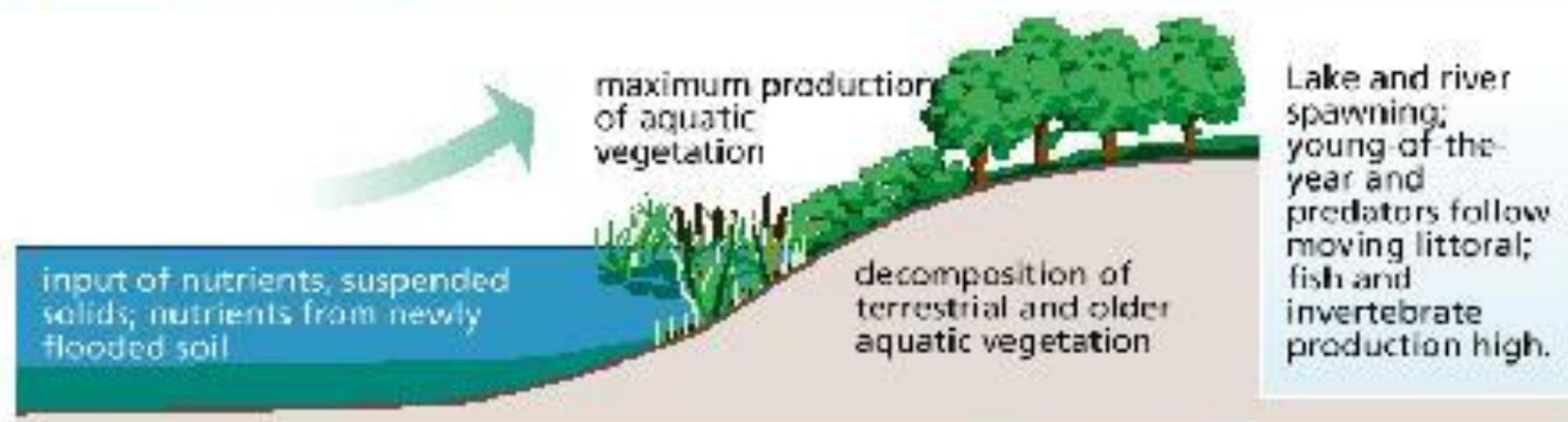
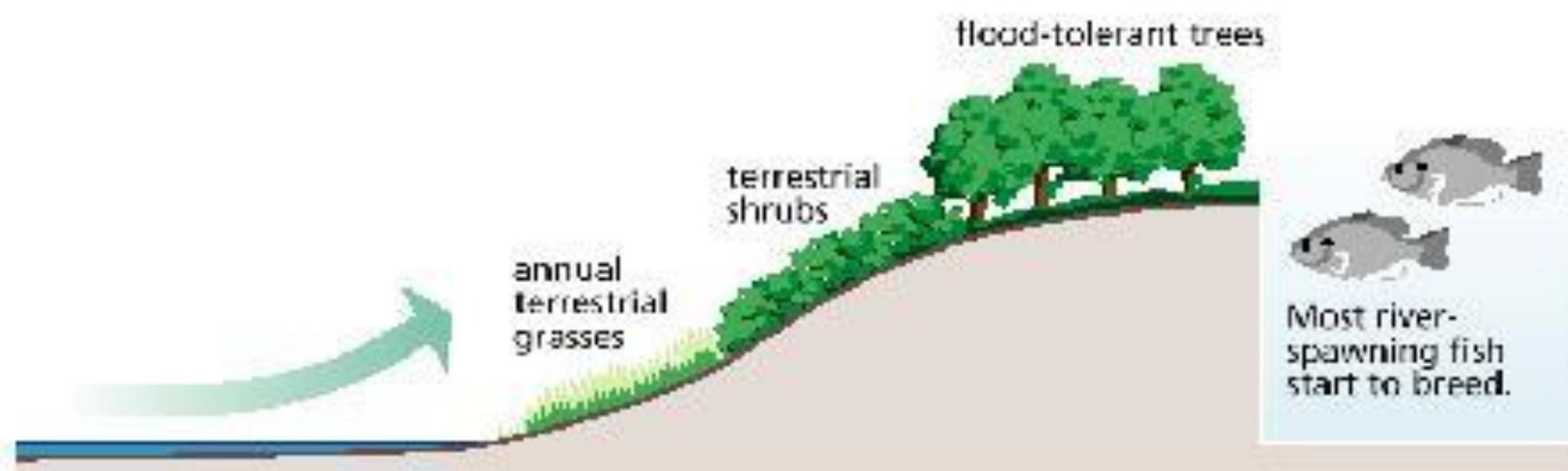


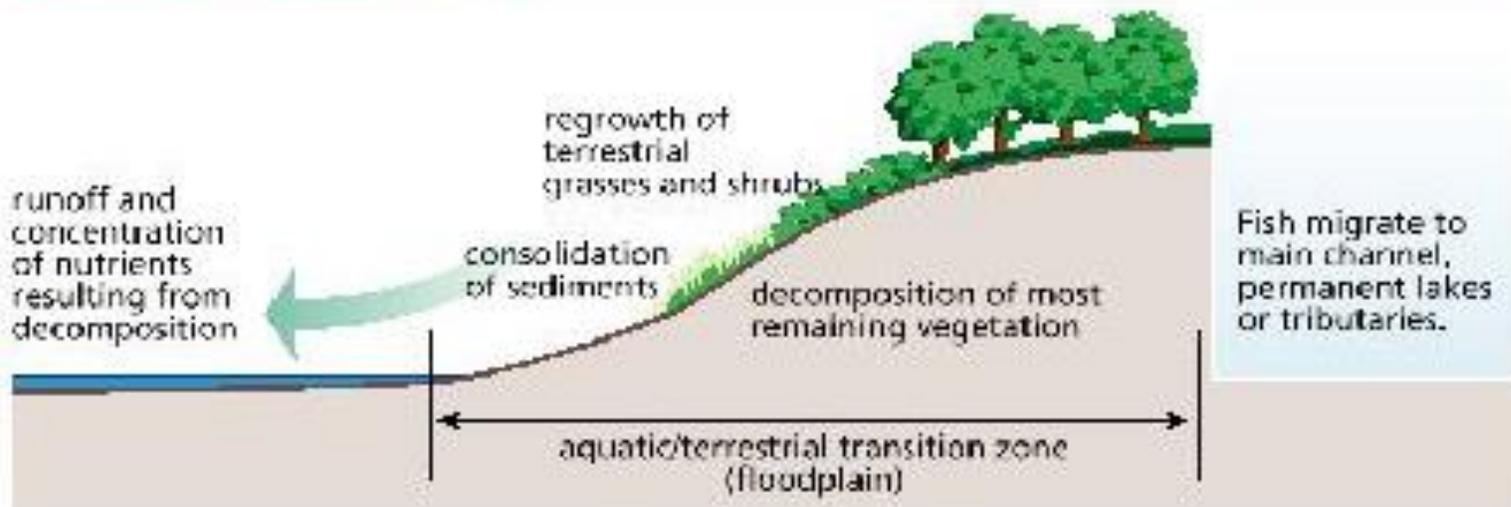
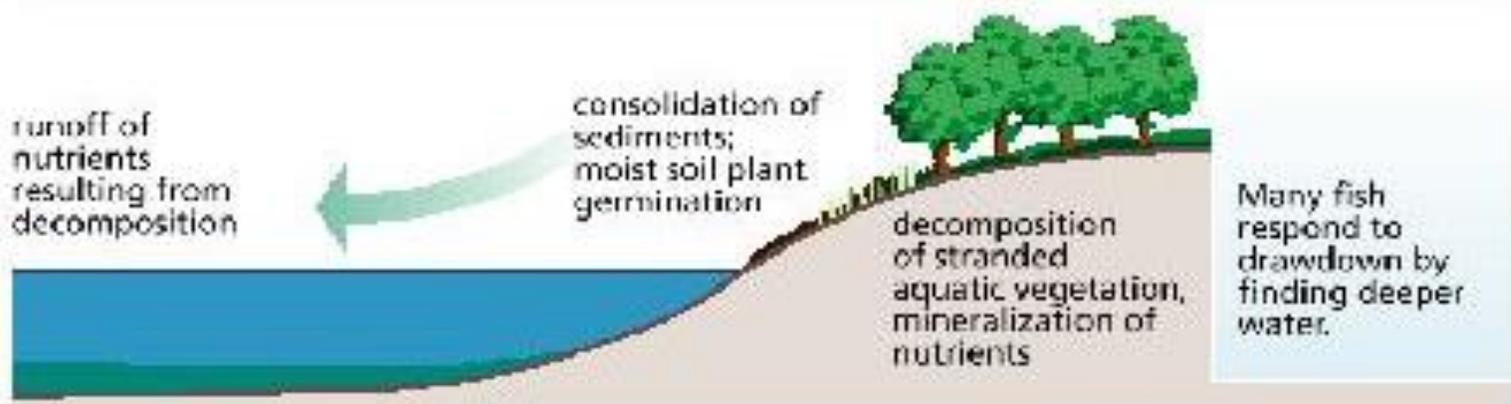
# Pulso de inundação na Reserva Mamirauá

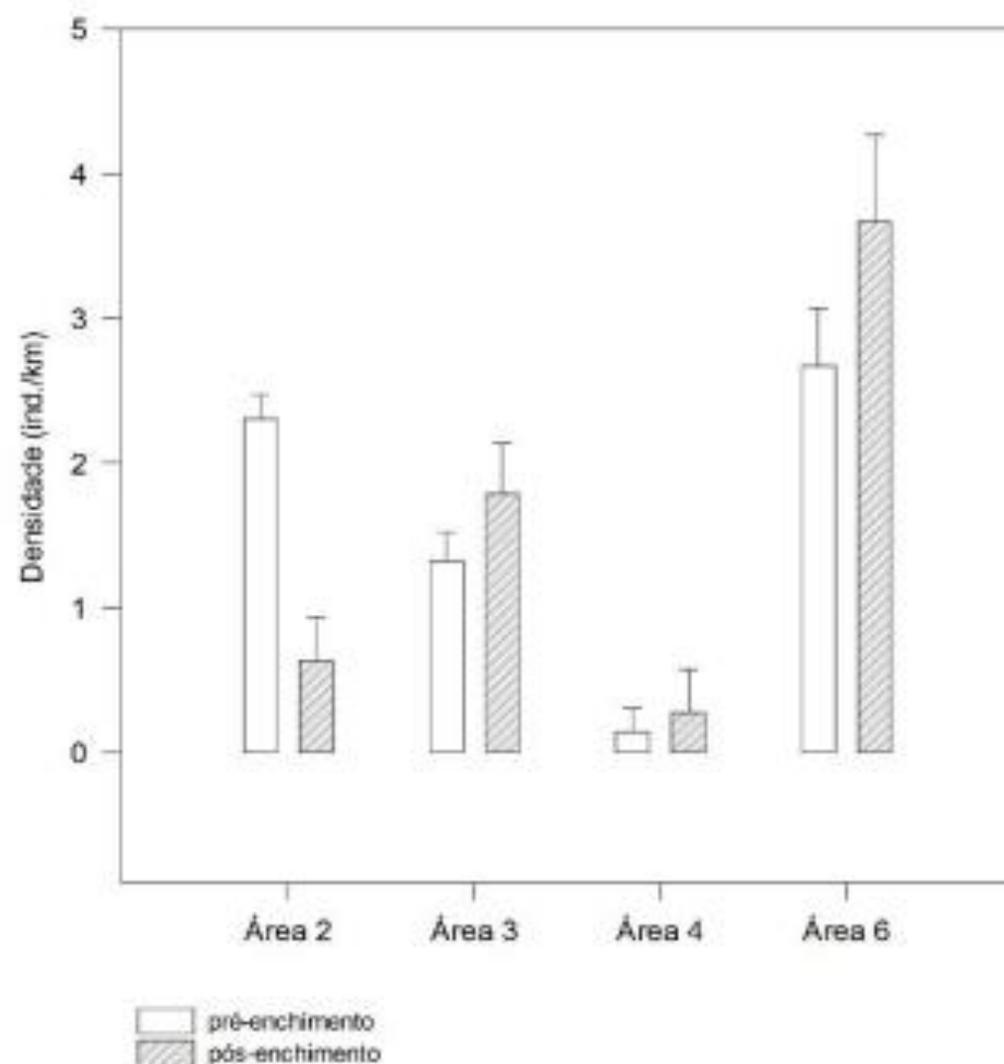
Rio Amazonas

Rio Japurá

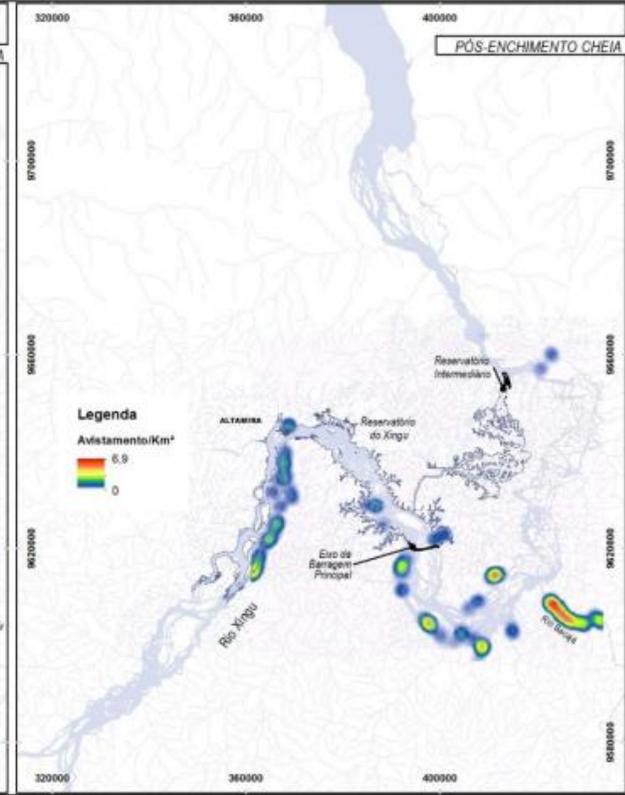
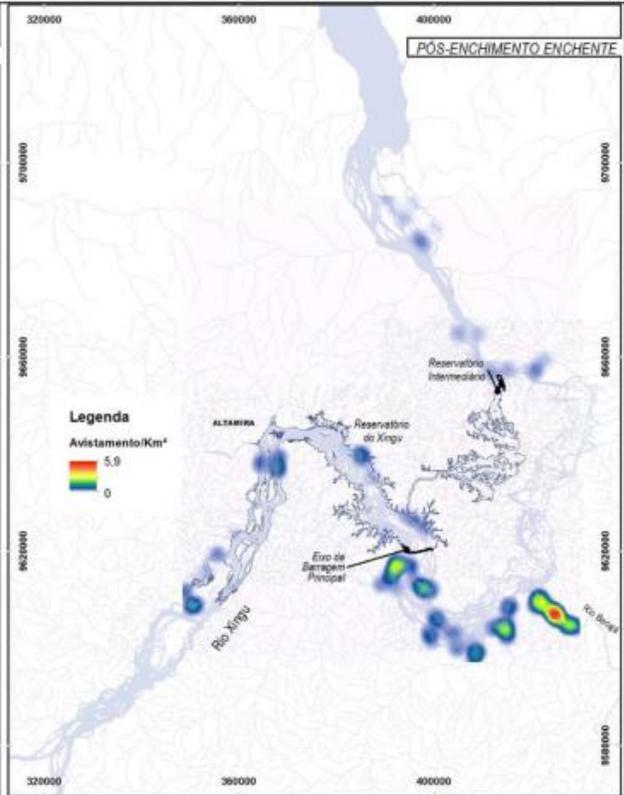
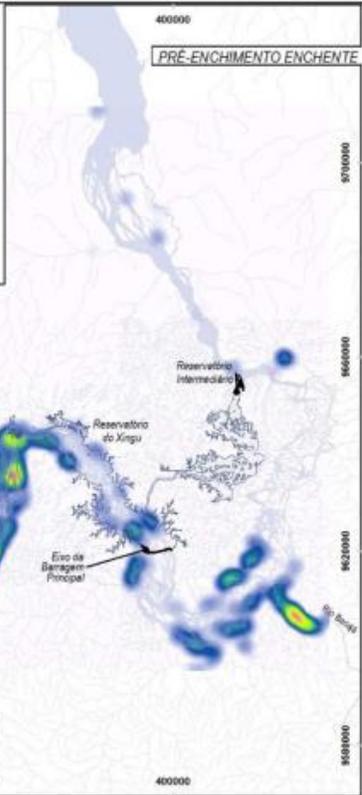








**Figura 13.5.2 - 2 – Densidade de quelônios no período de enchente, nas fases pré e pós-enchimento, nas áreas monitoradas da UHE Belo Monte. As barras indicam as médias e as barras os erros padrão.**



LEGENDA

■ Drenagens □ Limite de Reservatórios

0 10 20  
Escala Gráfica

SAD 1983 UTM Zona 21S  
Projção: Transverso Mercator  
Datum: Spherulid 82

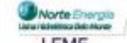

ÁREA DE INTENSIDADE DE REGISTROS DE QUELÔNIOS DURANTE AS FASES DE PRÉ E PÓS-ENCHIMENTO (ENCHENTE)

LEGENDA

■ Drenagens □ Limite de Reservatórios

0 10 20  
Escala Gráfica

SAD 1983 UTM Zona 21S  
Projção: Transverso Mercator  
Datum: Spherulid 82


ÁREA DE INTENSIDADE DE REGISTROS DE QUELÔNIOS DURANTE AS FASES DE PRÉ E PÓS-ENCHIMENTO (CHEIA)