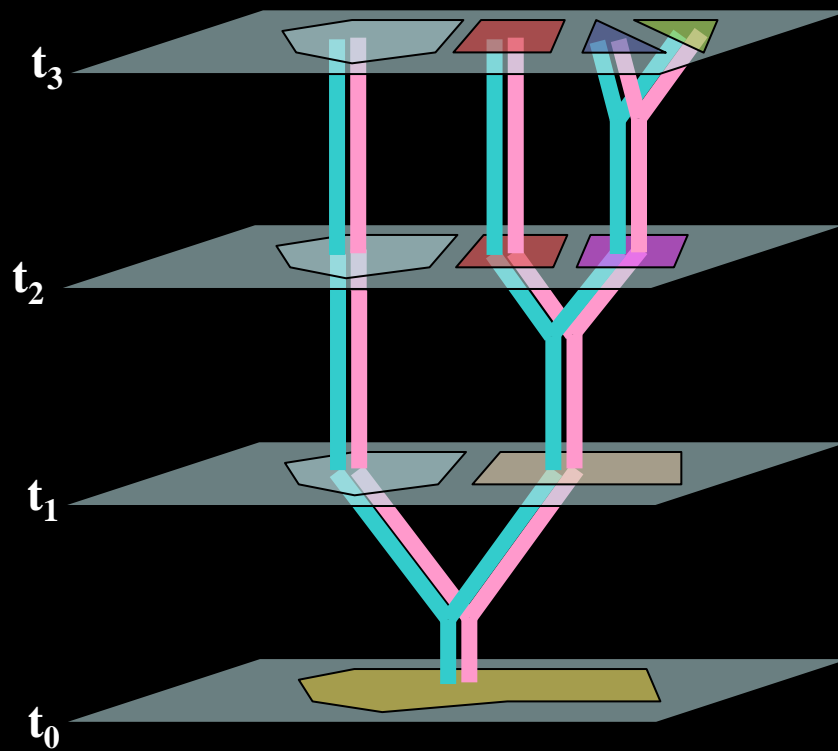


EXERCÍCIO DE BIOGEOGRAFIA



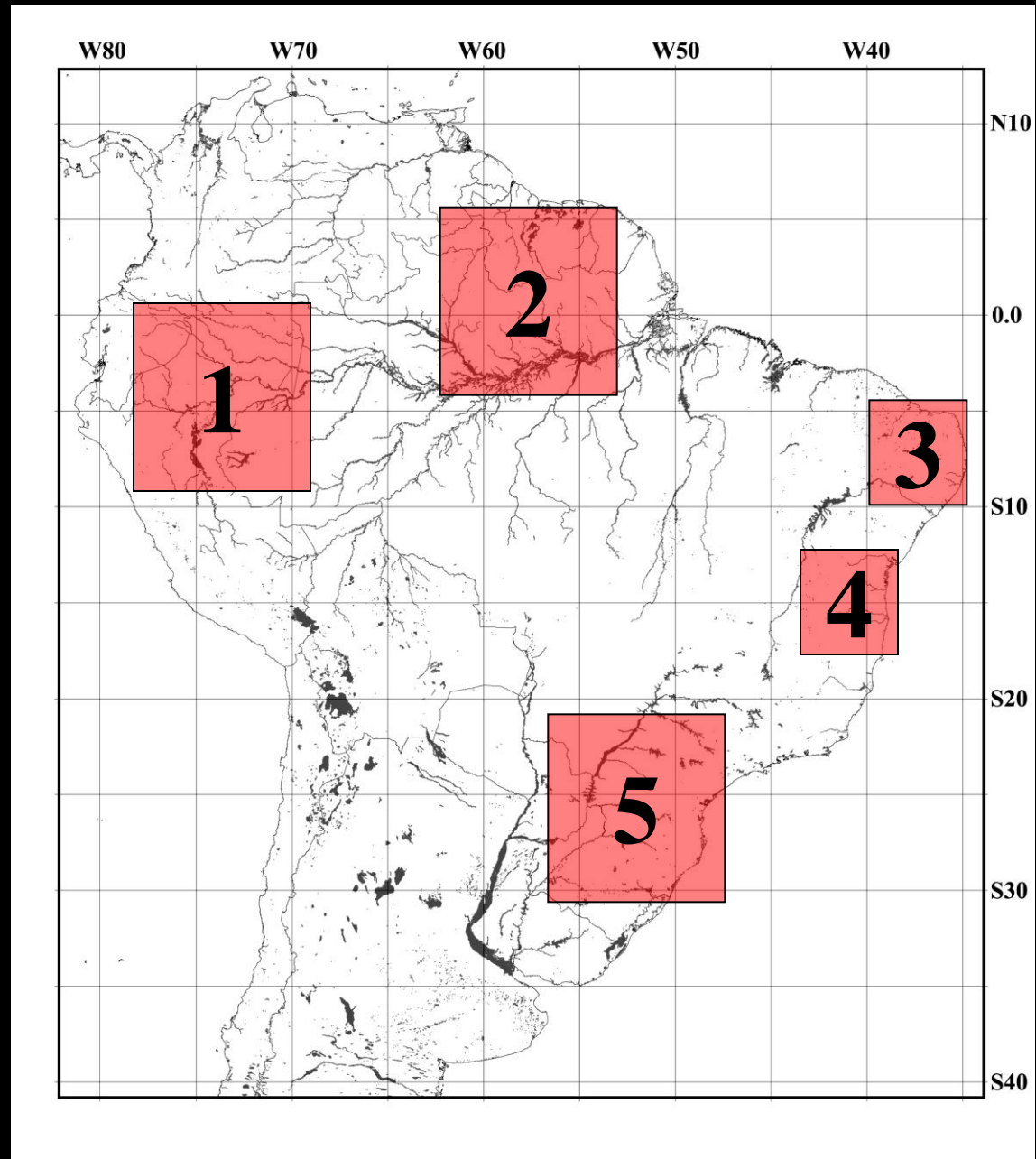
Exercício 9

Comparação dos traçados individuais

Áreas de ocorrência das espécies dos gêneros *Grus* e *Punctipetalum*

Grus maculatus
Grus longimanus
Grus nambiguasu
Grus bicornutus

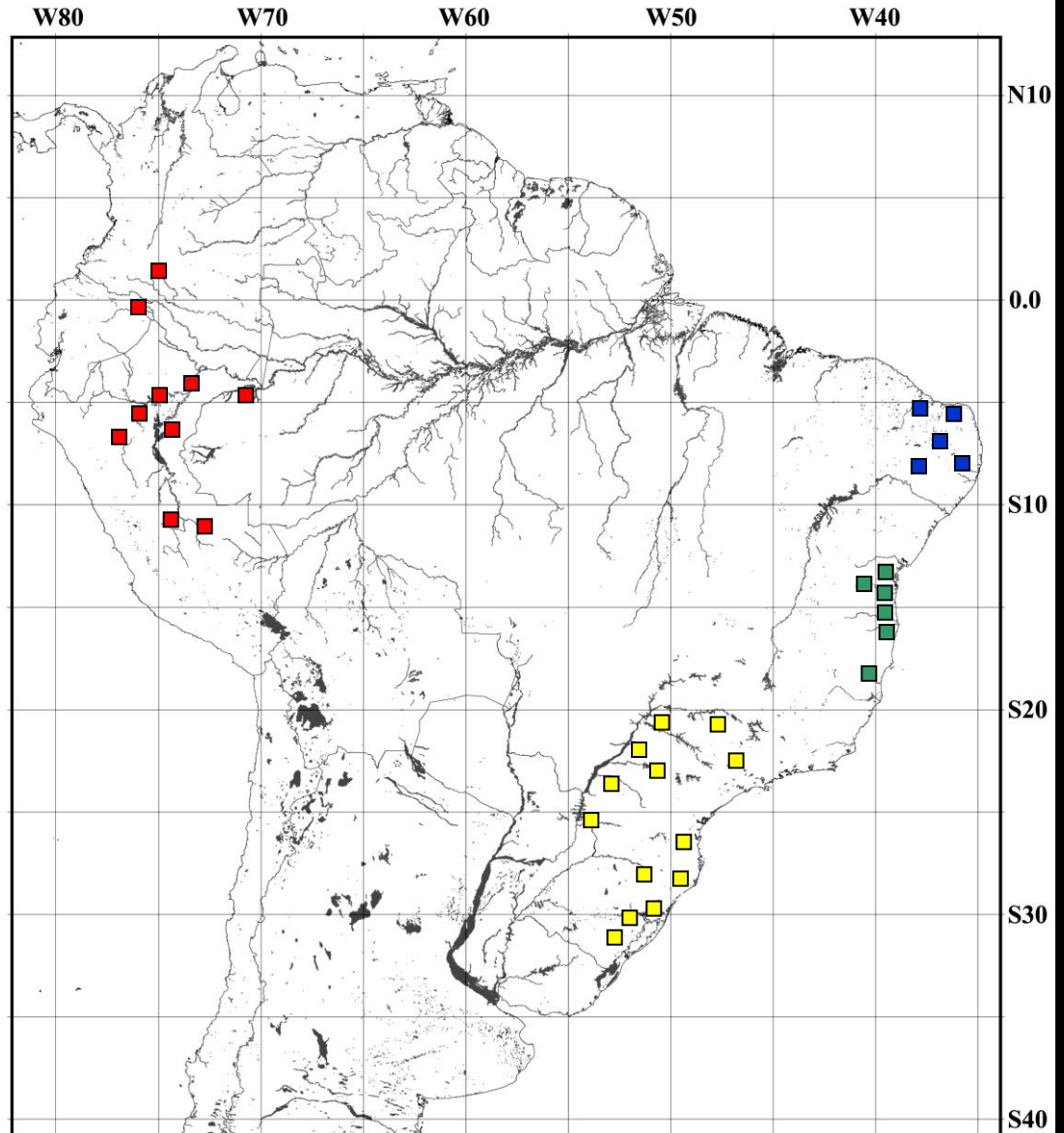
Punctipetalum tuberosum
P. rubrum
P. dentatum
P. brasiliense



Exercício 9

Distribuição das espécies do gênero *Grus*

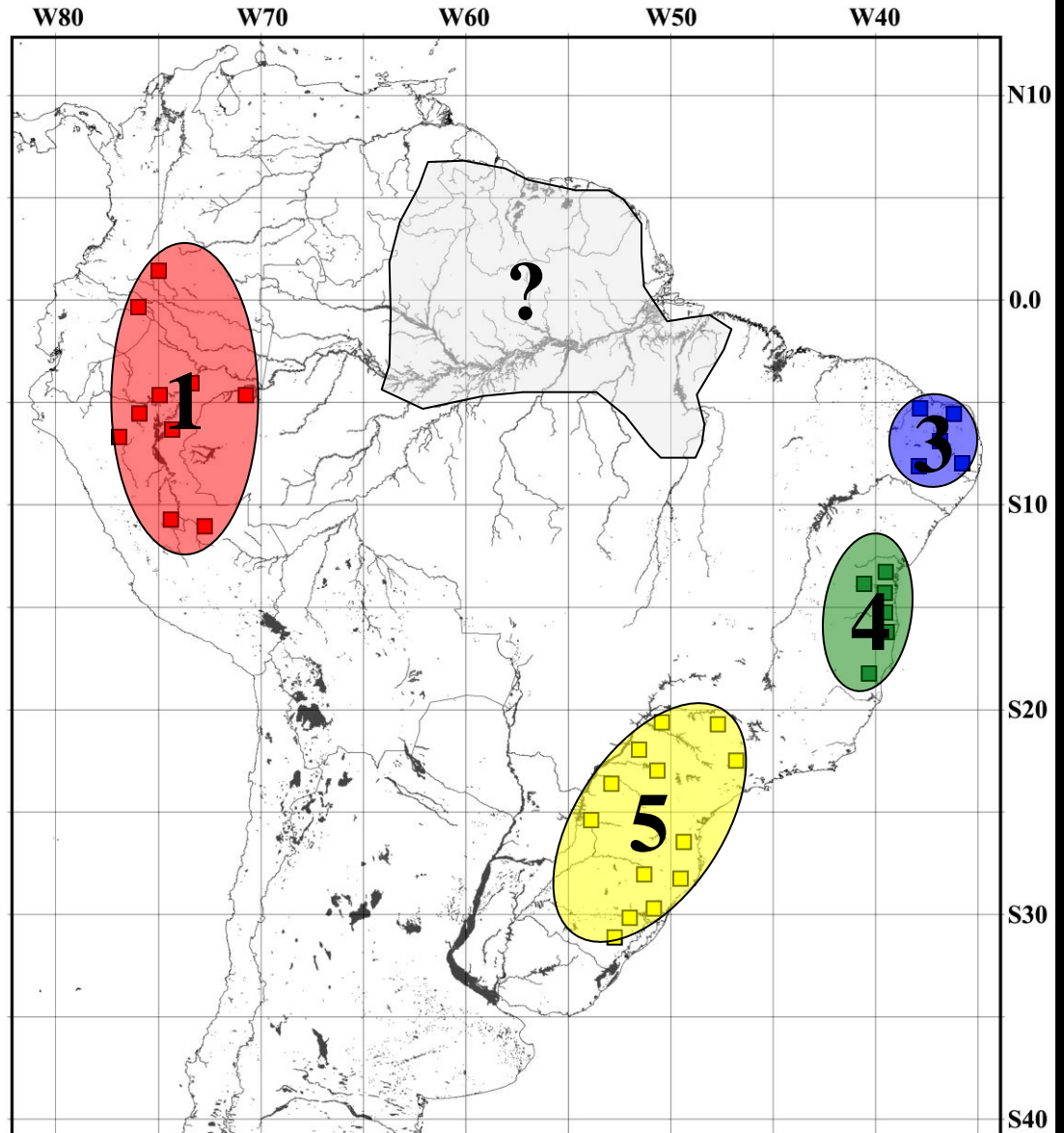
- *Grus maculatus*
- *Grus longimanus*
- *Grus nambiguasu*
- *Grus bicornutus*



Exercício 9

Traçados individuais
das espécies do gênero
Grus

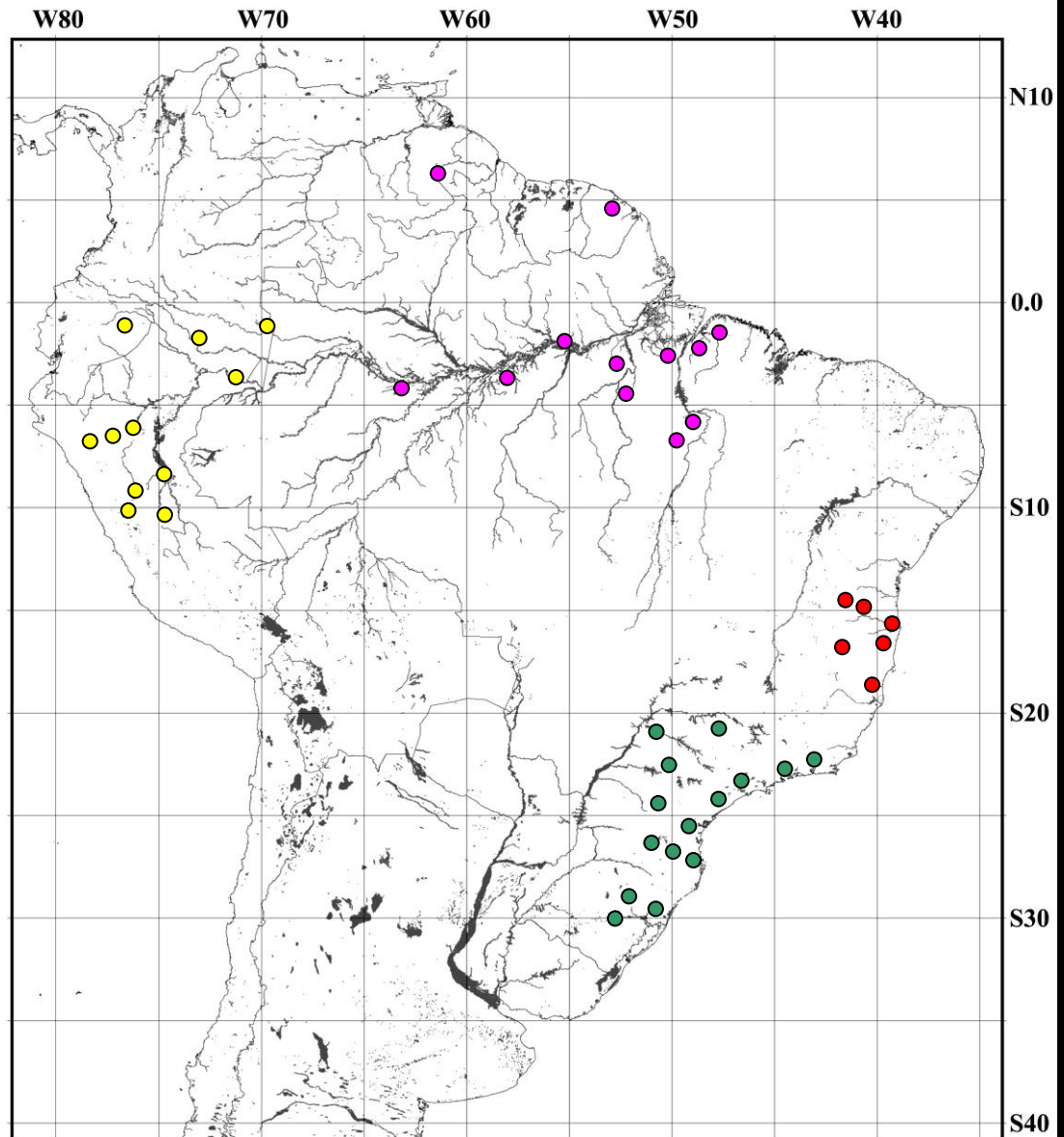
- *Grus maculatus*
- *Grus longimanus*
- *Grus nambiguasu*
- *Grus bicornutus*



Exercício 9

Distribuição das espécies do gênero *Punctipetalum*

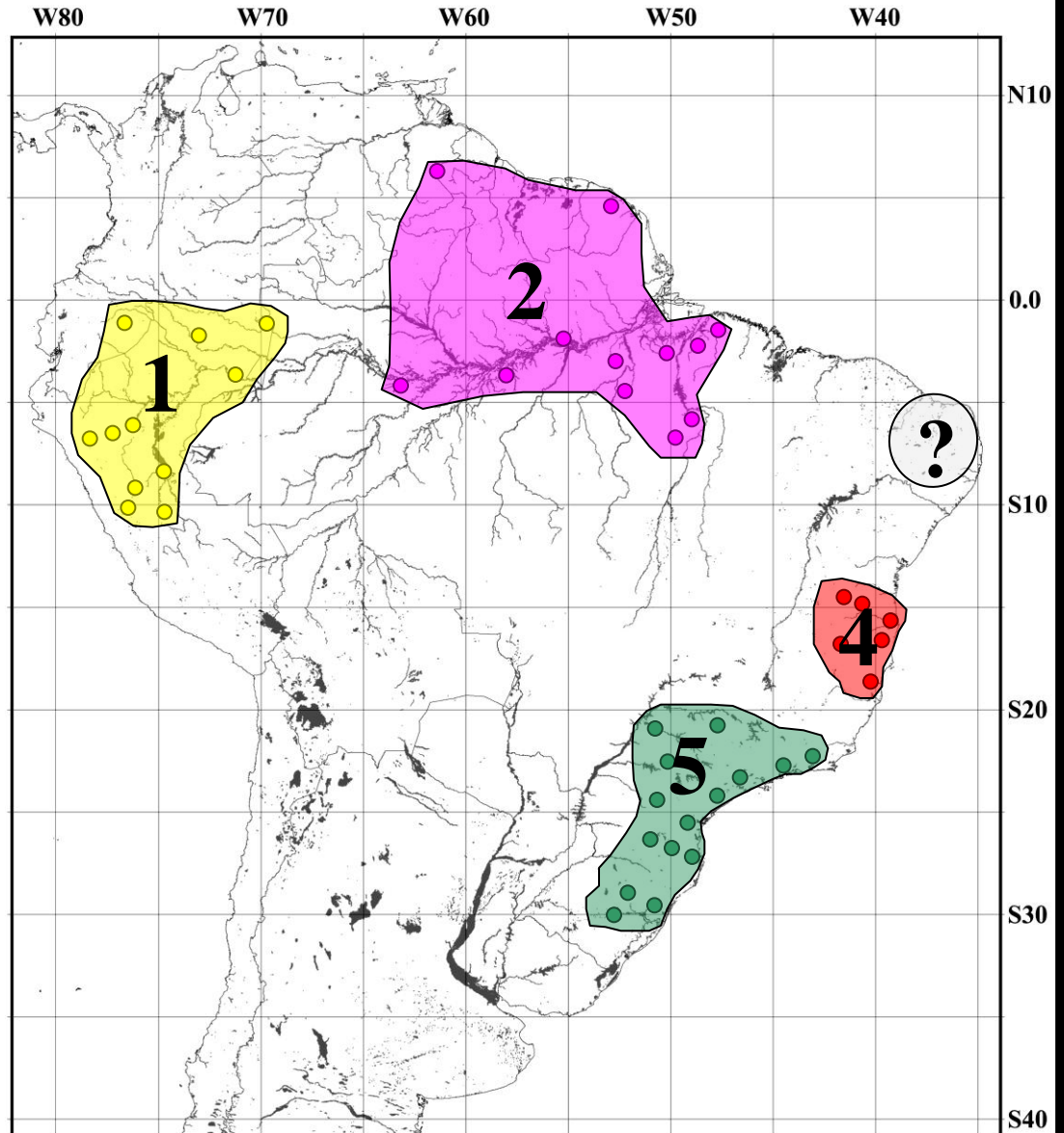
- *P. tuberosum*
- *P. rubrum*
- *P. dentatum*
- *P. brasiliense*



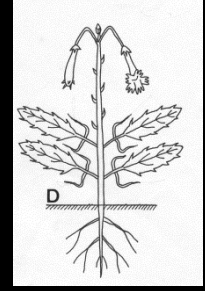
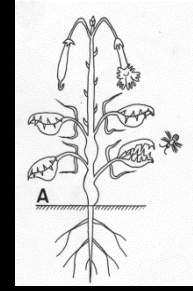
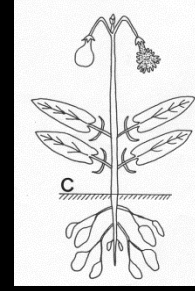
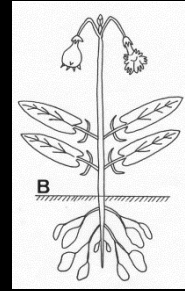
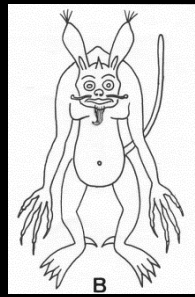
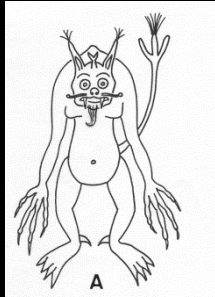
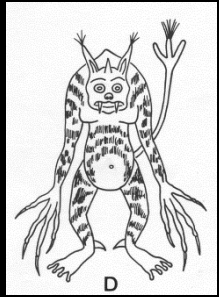
Exercício 9

Traçados individuais
das espécies do gênero
Punctipetalum

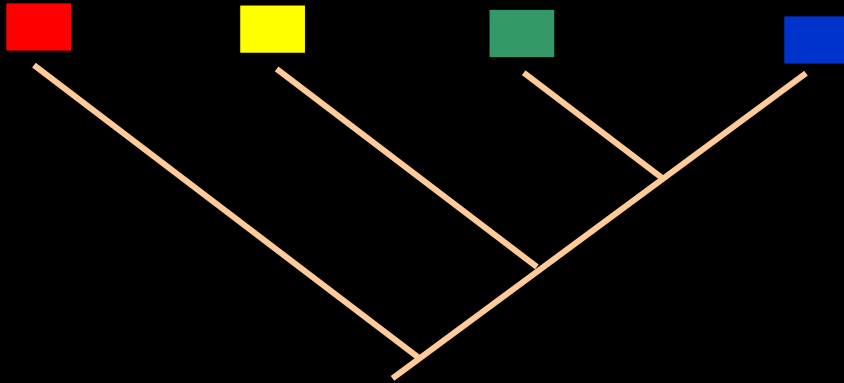
- *P. tuberosum*
- *P. rubrum*
- *P. dentatum*
- *P. brasiliense*



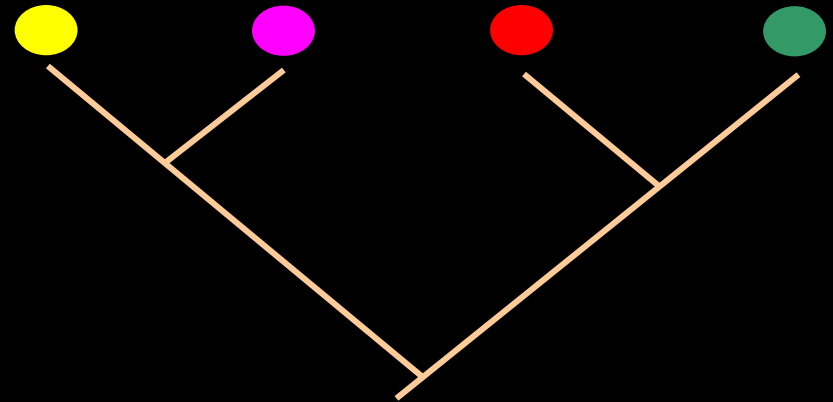
Exercício 10



G. maculatus *G. bicornutus* *G. nambiguasu* *G. longimanus* *P. tuberosum* *P. rubrum* *P. dentatum* *P. brasiliense*



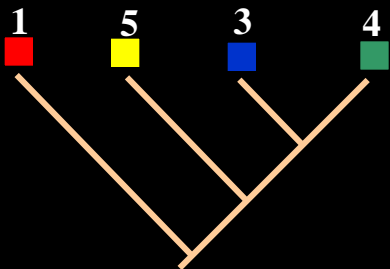
Grus



Punctipetalum

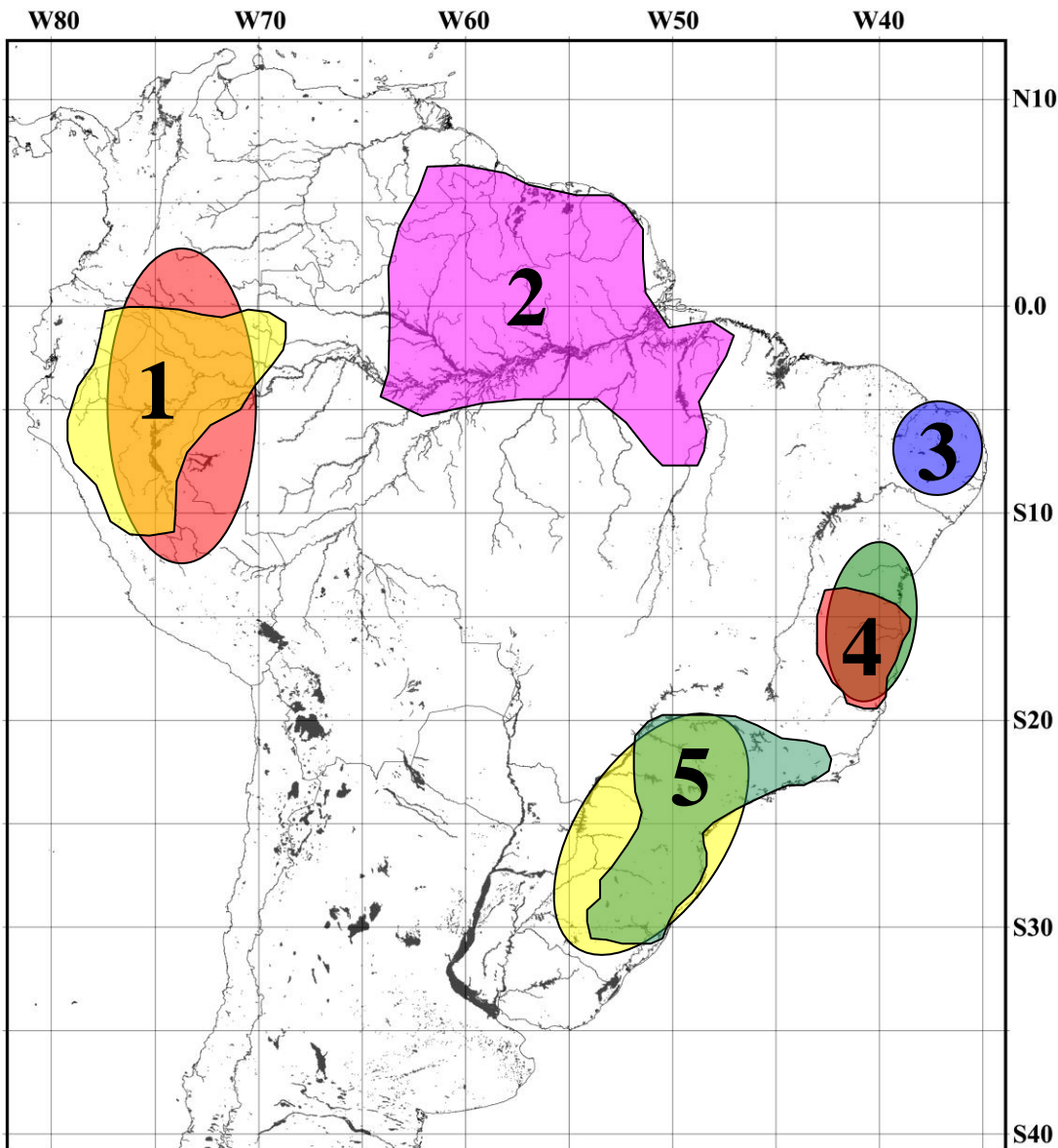
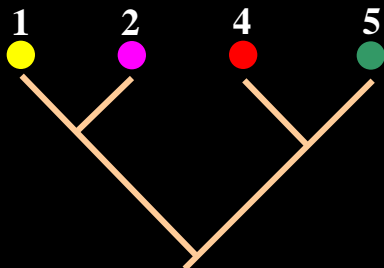
Exercício 10

- *Grus maculatus*
- *Grus longimanus*
- *Grus nambiguasu*
- *Grus bicornutus*



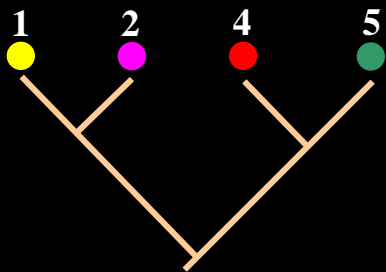
Cladogramas de área

- *P. tuberosum*
- *P. rubrum*
- *P. dentatum*
- *P. brasiliense*

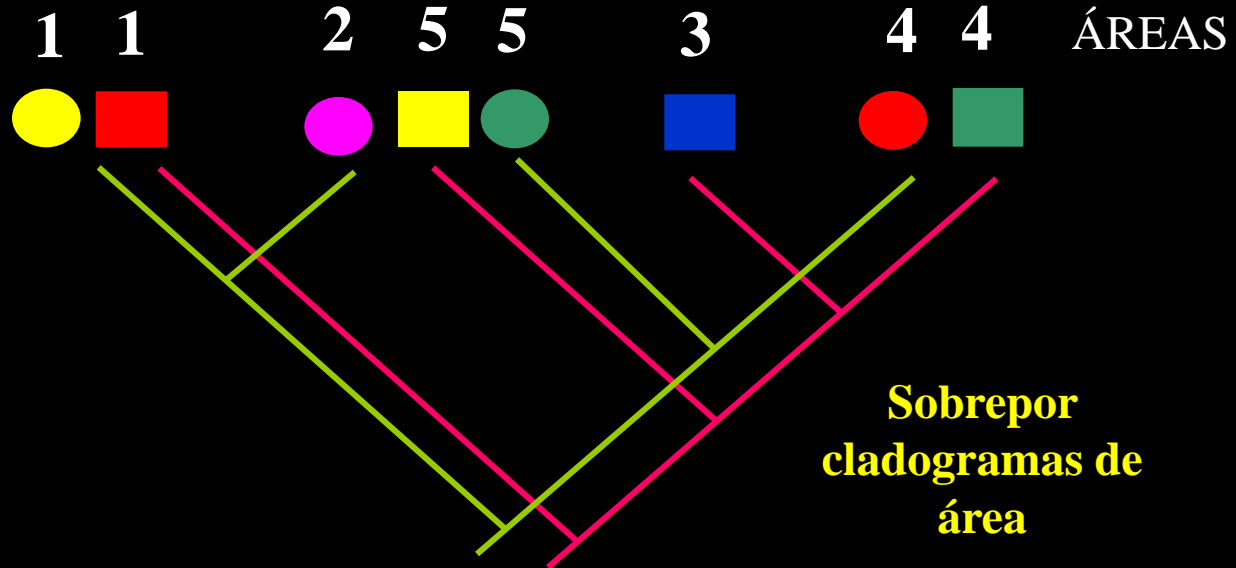
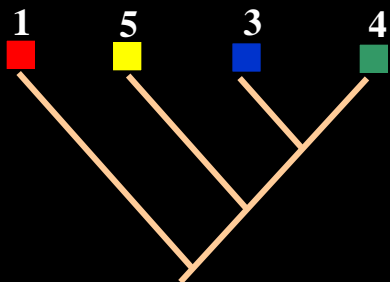


Exercício 10: CLADOGRAMA REDUZIDO DE ÁREA

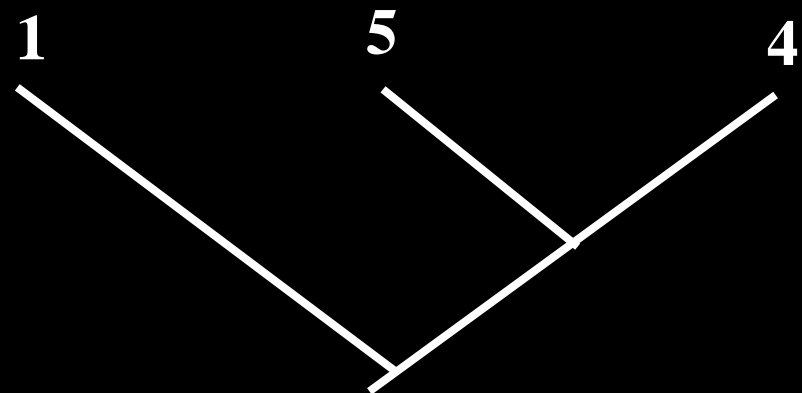
- *P. tuberosum*
- *P. rubrum*
- *P. dentatum*
- *P. brasiliense*



- *Grus maculatus*
- *Grus longimanus*
- *Grus nambiguasu*
- *Grus bicornutus*



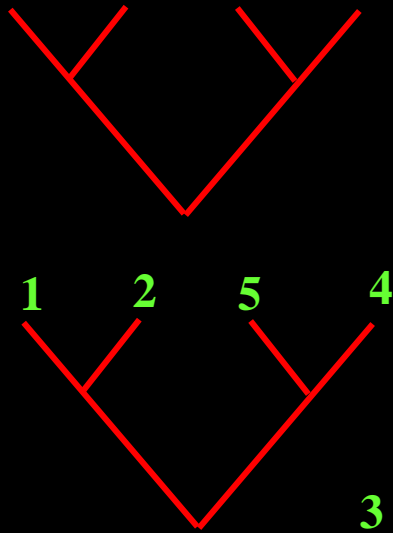
Retirar elementos incongruentes 2 e 3
Cladograma reduzido de área



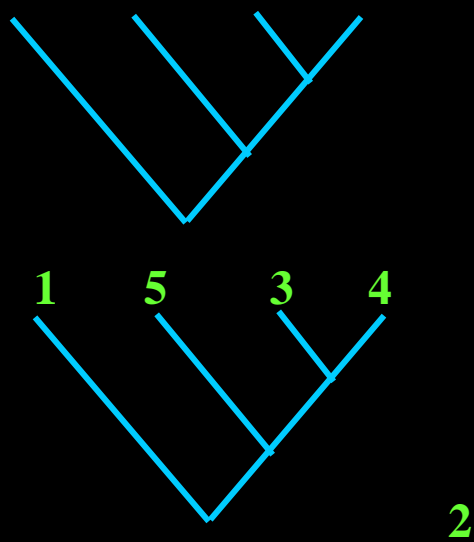
Exercício 10 ANÁLISE DE COMPONENTES

1. Substituir nomes dos terminais pela áreas de ocorrência dos gêneros *Punctipetalum* e *Grus*.

P.tub *P.rub* *P.bra* *P.den*

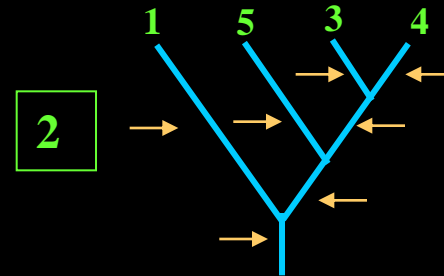
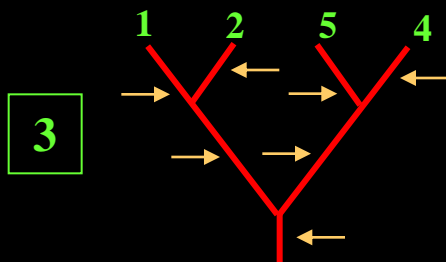


G.mac *G.bic* *G.nam* *G.lon*



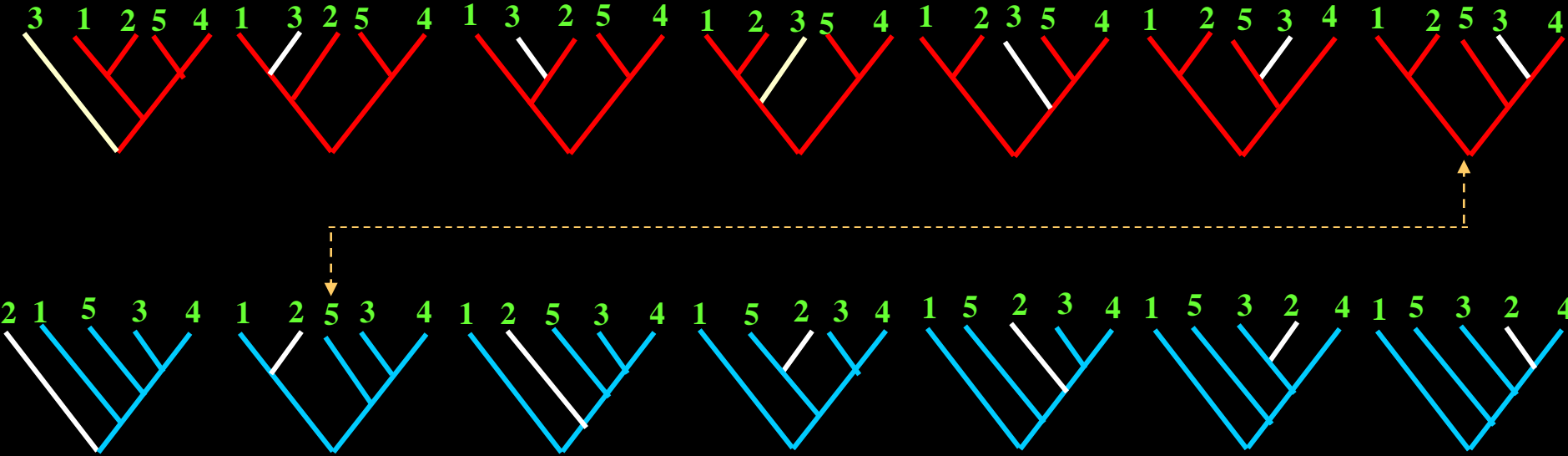
2. Anotar as áreas ausentes em cada cladograma: 2 e 3

3. Verificar onde podem ser inseridas as áreas ausentes

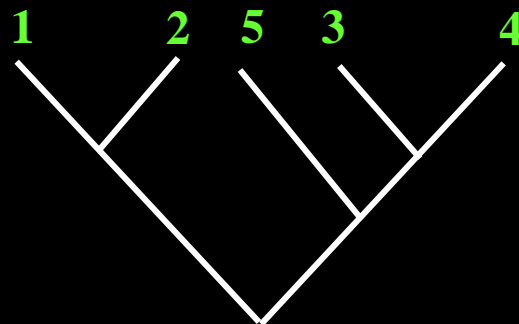


Exercício 10 ANÁLISE DE COMPONENTES

4. Construir os cladogramas individuais possíveis

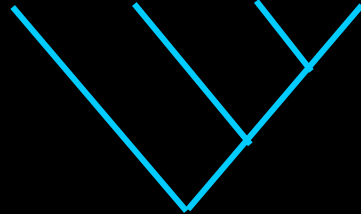


5. O Cladograma Geral de Área será aquele que representar a intersecção dos cladogramas individuais

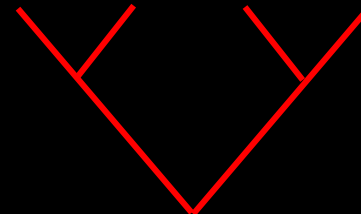


Exercício 10 ANÁLISE DE PARCIMÔNIA DE BROOKS - BPA

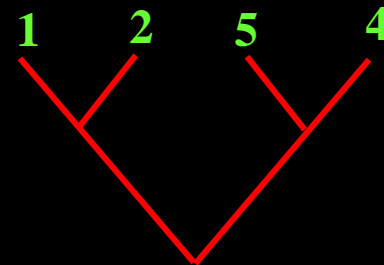
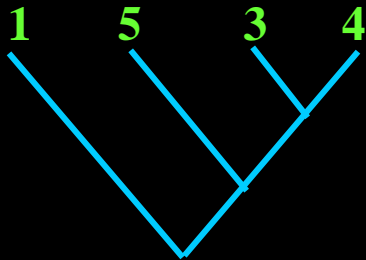
G.mac *G.bic* *G.nam* *G.lon*



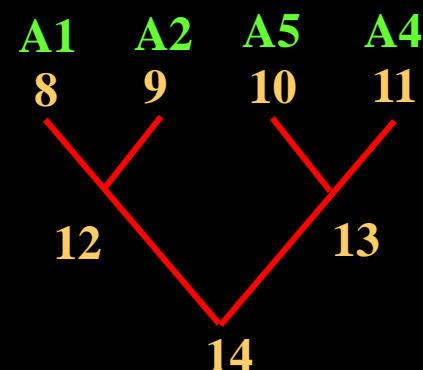
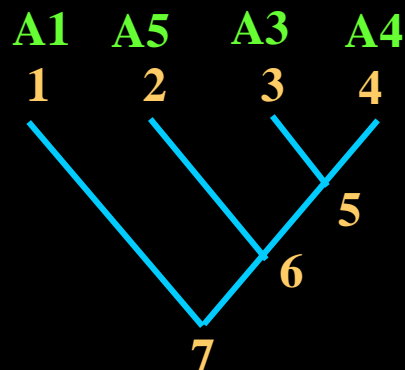
P.tub *P.rub* *P.bra* *P.den*



1. Substituir os nomes dos terminais pelos códigos das áreas onde ocorrem

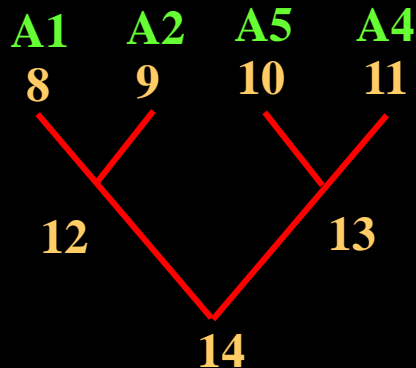
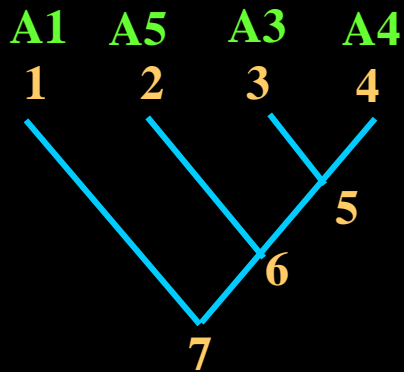


2. Enumerar todos os ramos internos e externos (grupos monofiléticos)



Exercício 10 ANÁLISE DE PARCIMÔNIA DE BROOKS - BPA

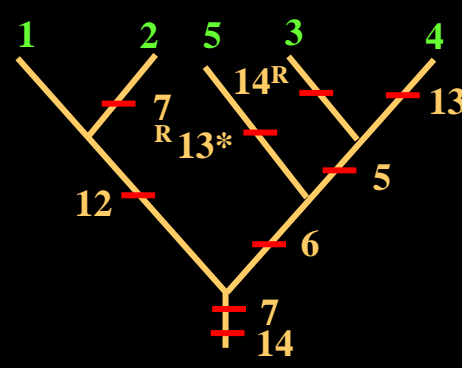
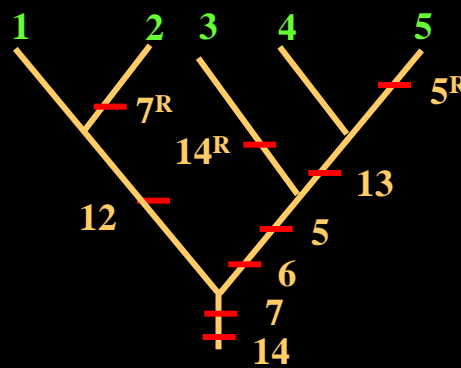
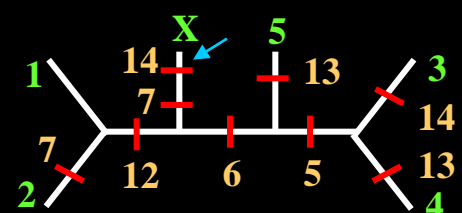
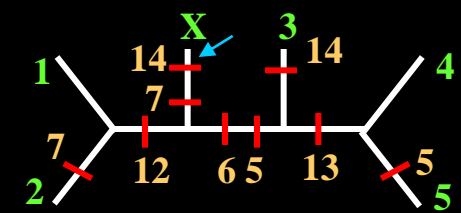
3. Construir uma matriz de representação com base na informação fornecida pelos cladogramas de área: presença (1) ou ausência (0).



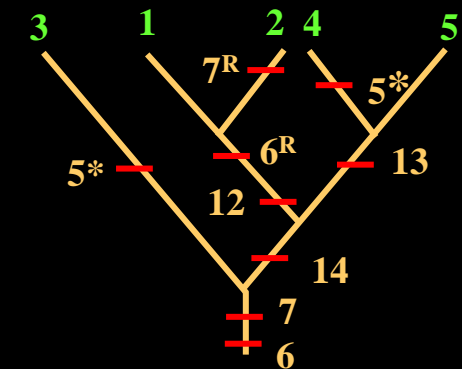
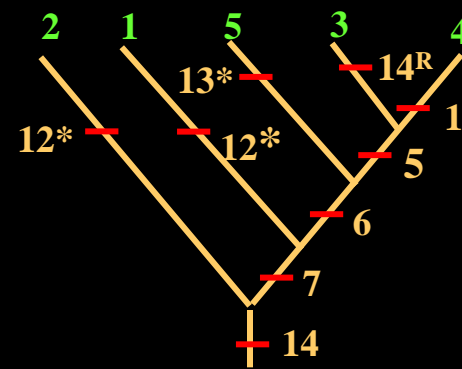
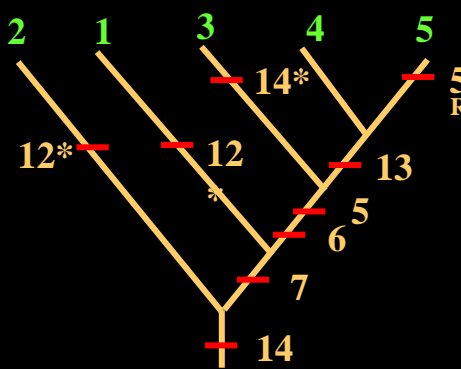
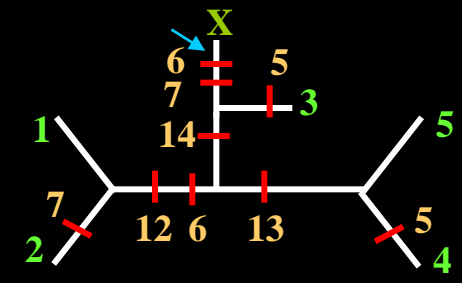
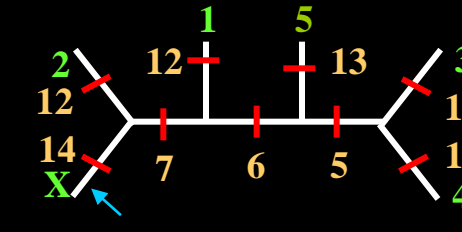
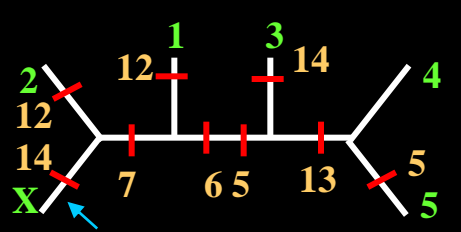
	5	6	7	12	13	14
A1	0	0	1	1	0	1
A2	0	0	0	1	0	1
A3	1	1	1	0	0	0
A4	1	1	1	0	1	1
A5	0	1	1	0	1	1
X	0	0	0	0	0	0
	34	345	1345	12	45	1245

4. Análise cladística com base na matriz de representação

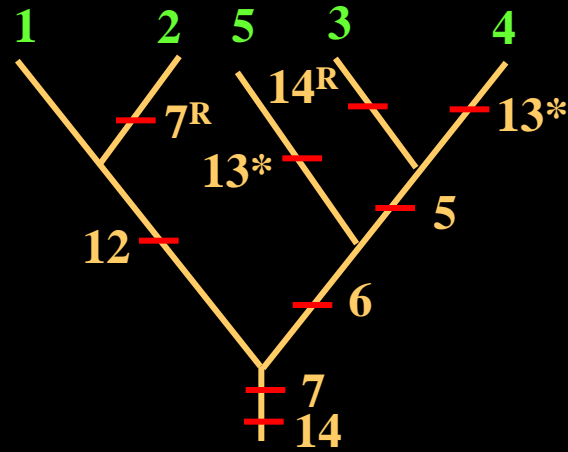
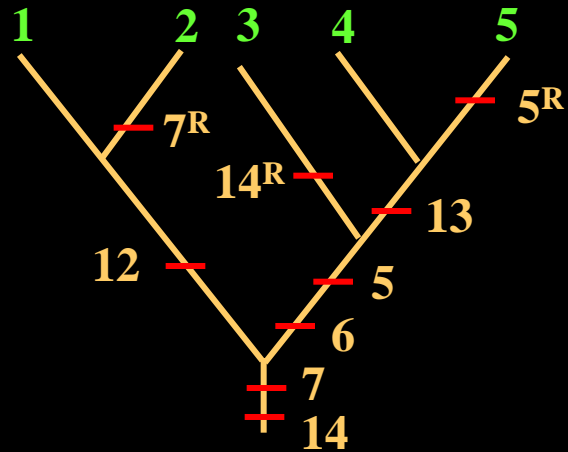
EX. 10 - BPA 4. Análise cladística com base na matriz de representação



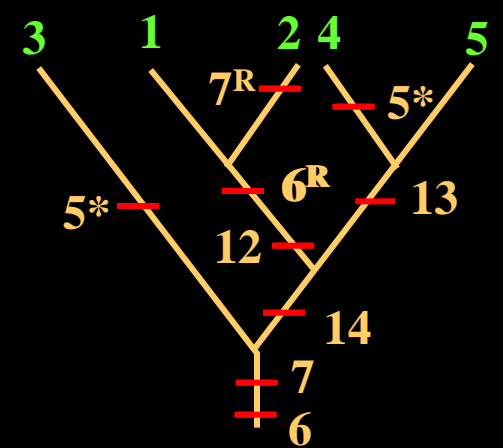
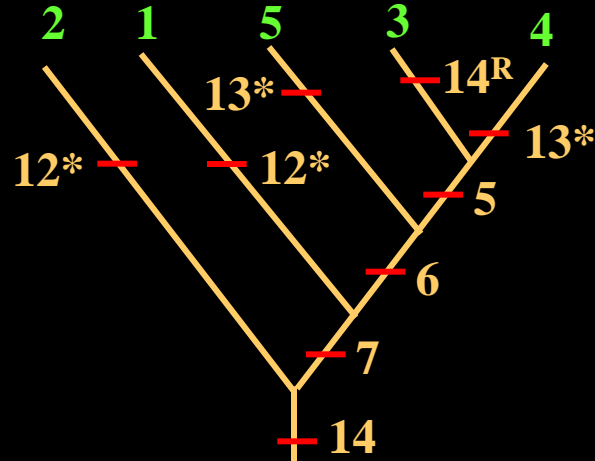
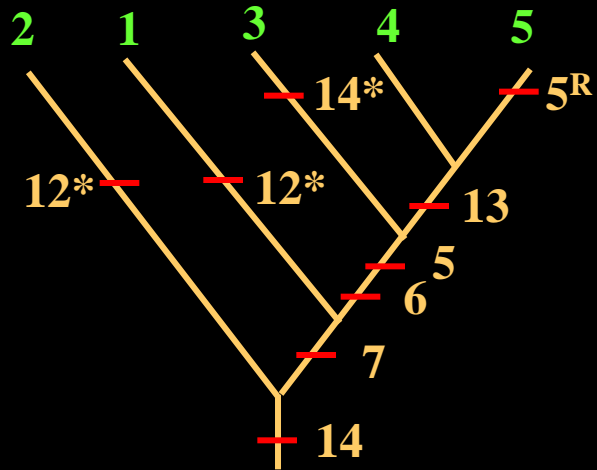
	5	6	7	1	1	1
				2	3	4
A1	0	0	1	1	0	1
A2	0	0	0	1	0	1
A3	1	1	1	0	0	0
A4	1	1	1	0	1	1
A5	0	1	1	0	1	1
X	0	0	0	0	0	0
	34	345	1345	12	45	1245



EX. 10 - BPA 4. Análise cladística com base na matriz de representação

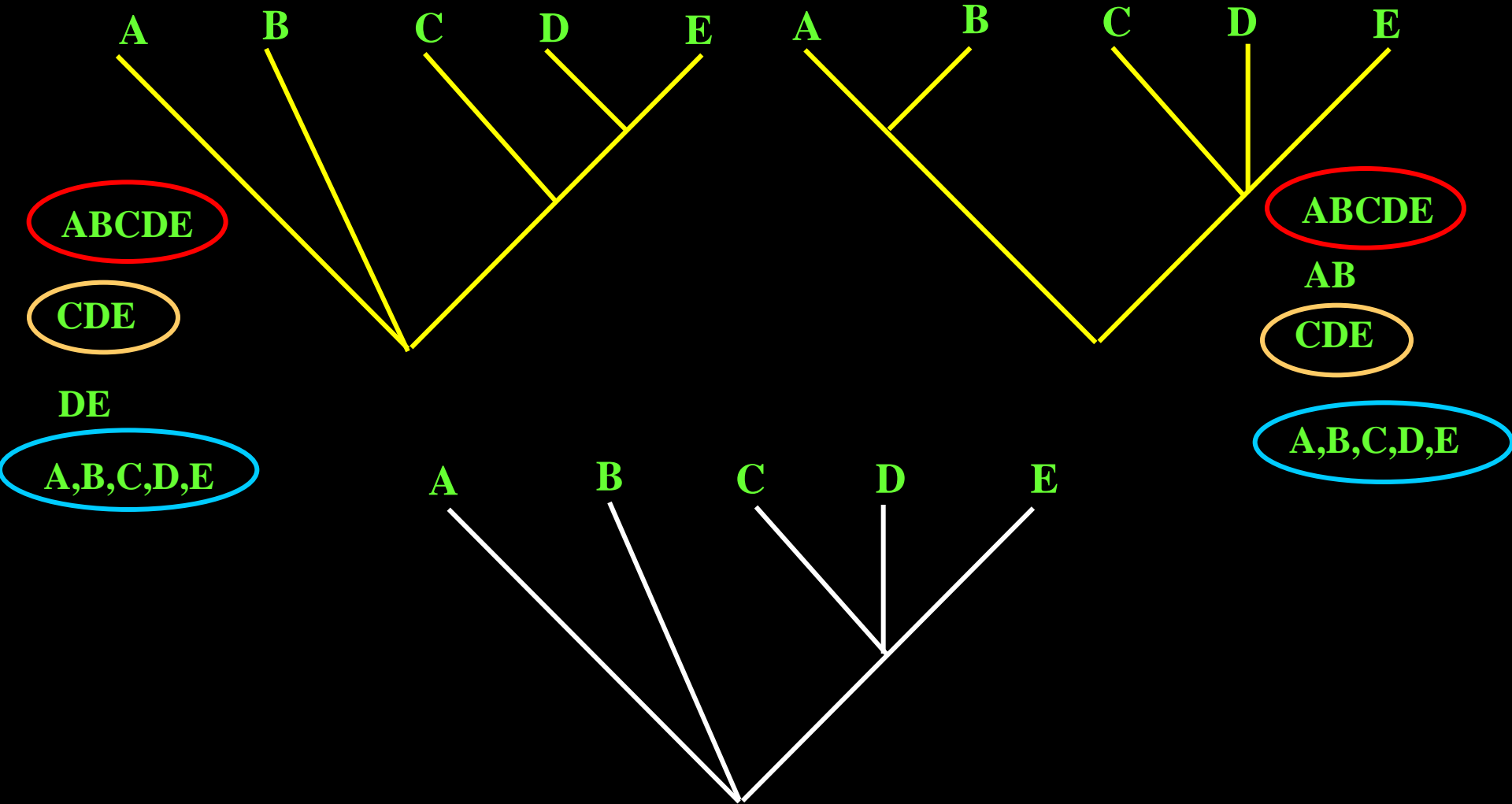


	5	6	7	1	1	1
				2	3	4
A1	0	0	1	1	0	1
A2	0	0	0	1	0	1
A3	1	1	1	0	0	0
A4	1	1	1	0	1	1
A5	0	1	1	0	1	1
X	0	0	0	0	0	0
	34	345	1345	12	45	1245



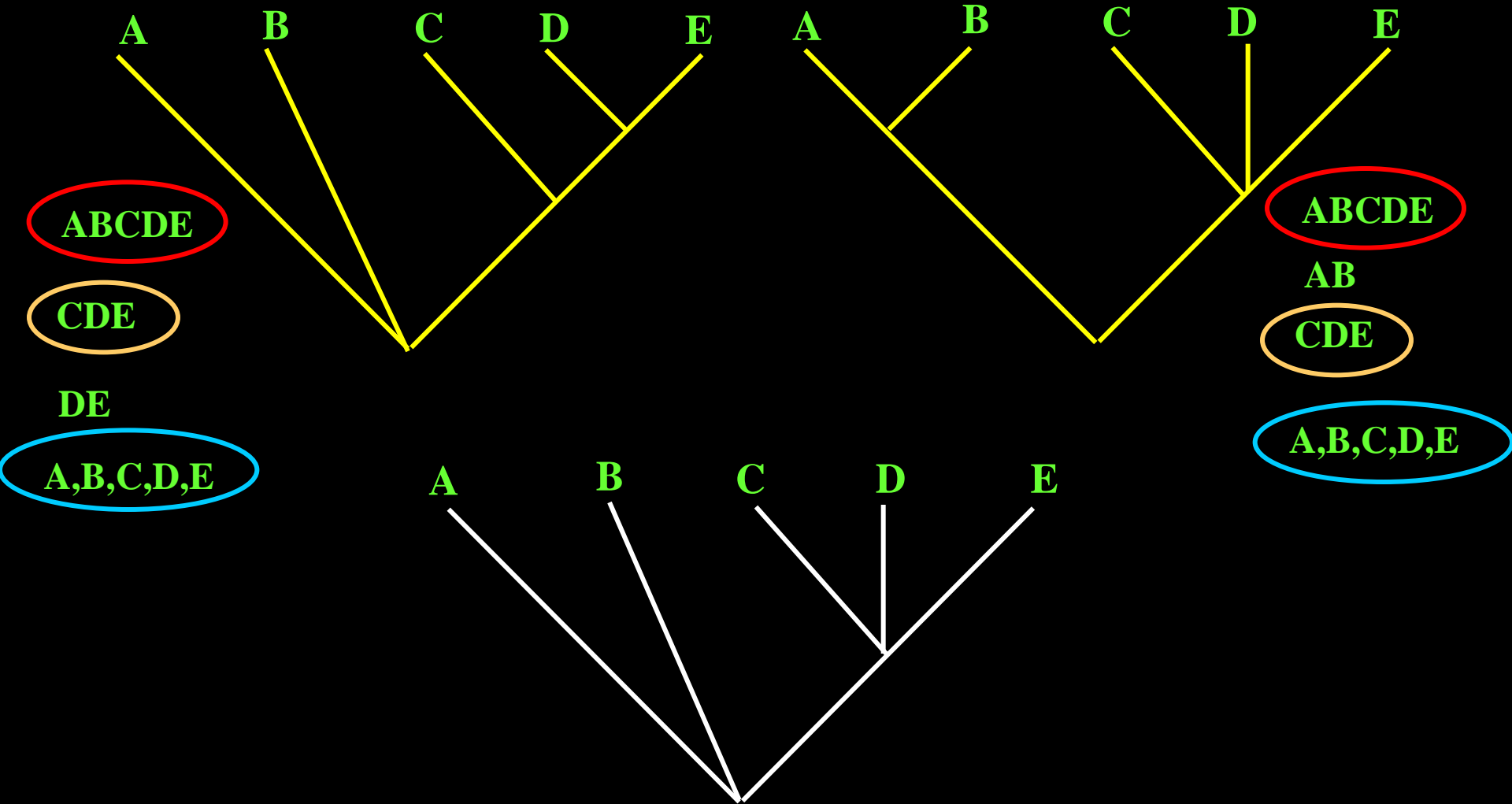
CONSENSO

CONSENSO ESTRITO



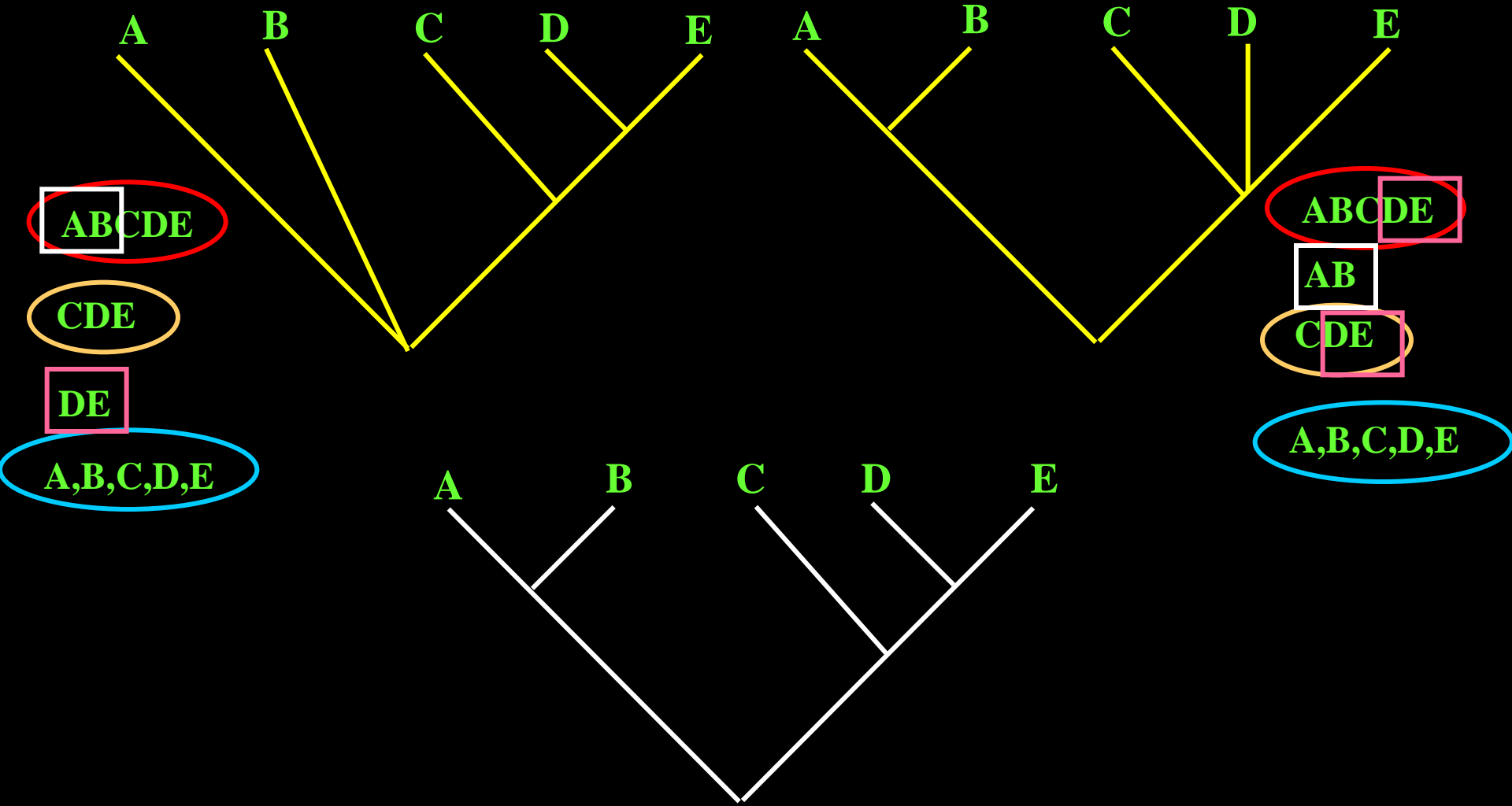
CONSENSO

CONSENSO ESTRITO



CONSENSO

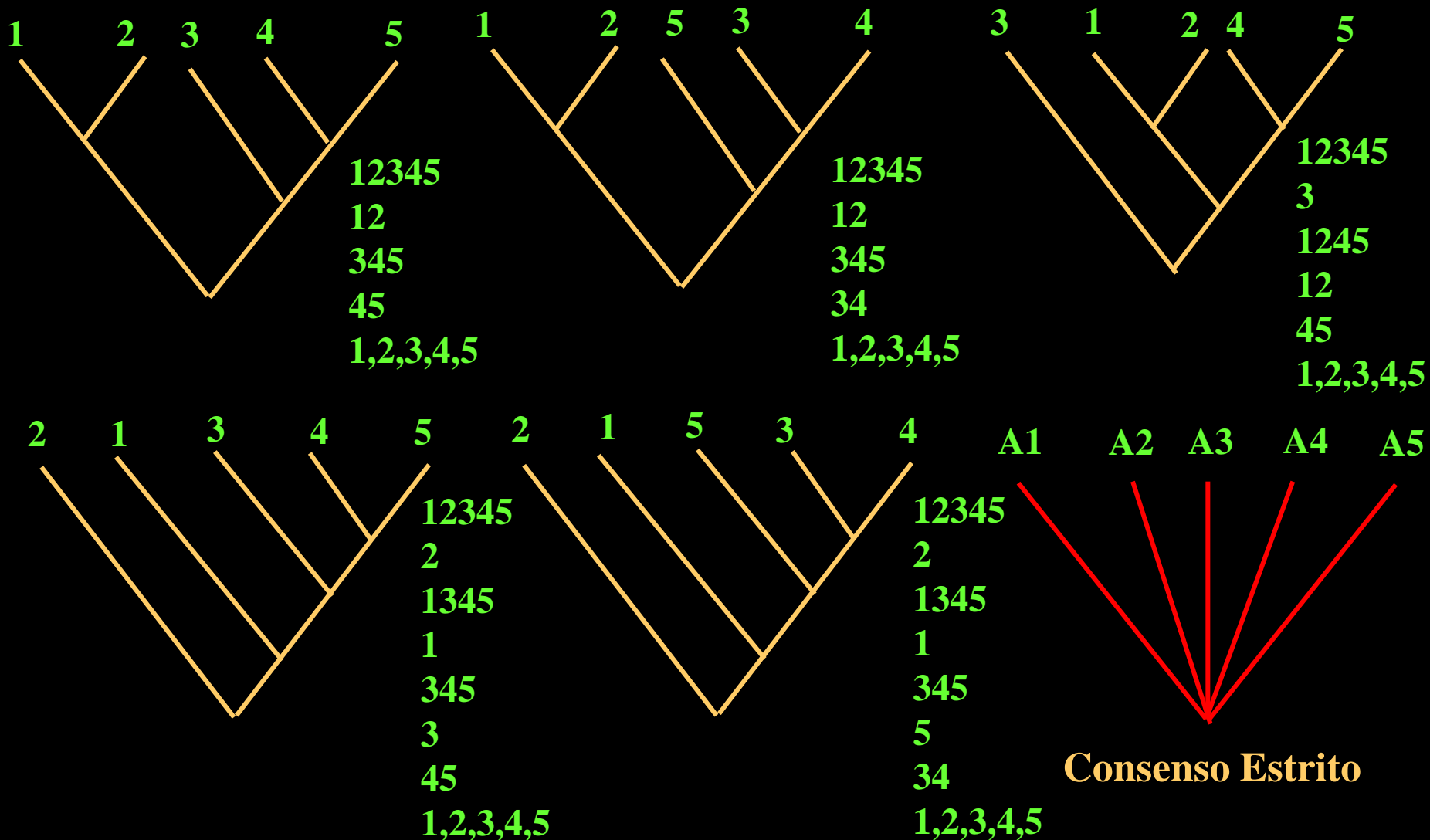
CONSENSO SEMI-ESTRITO



Exercício 10: ANÁLISE DE PARCIMÔNIA DE BROOKS - BPA

5. Consenso

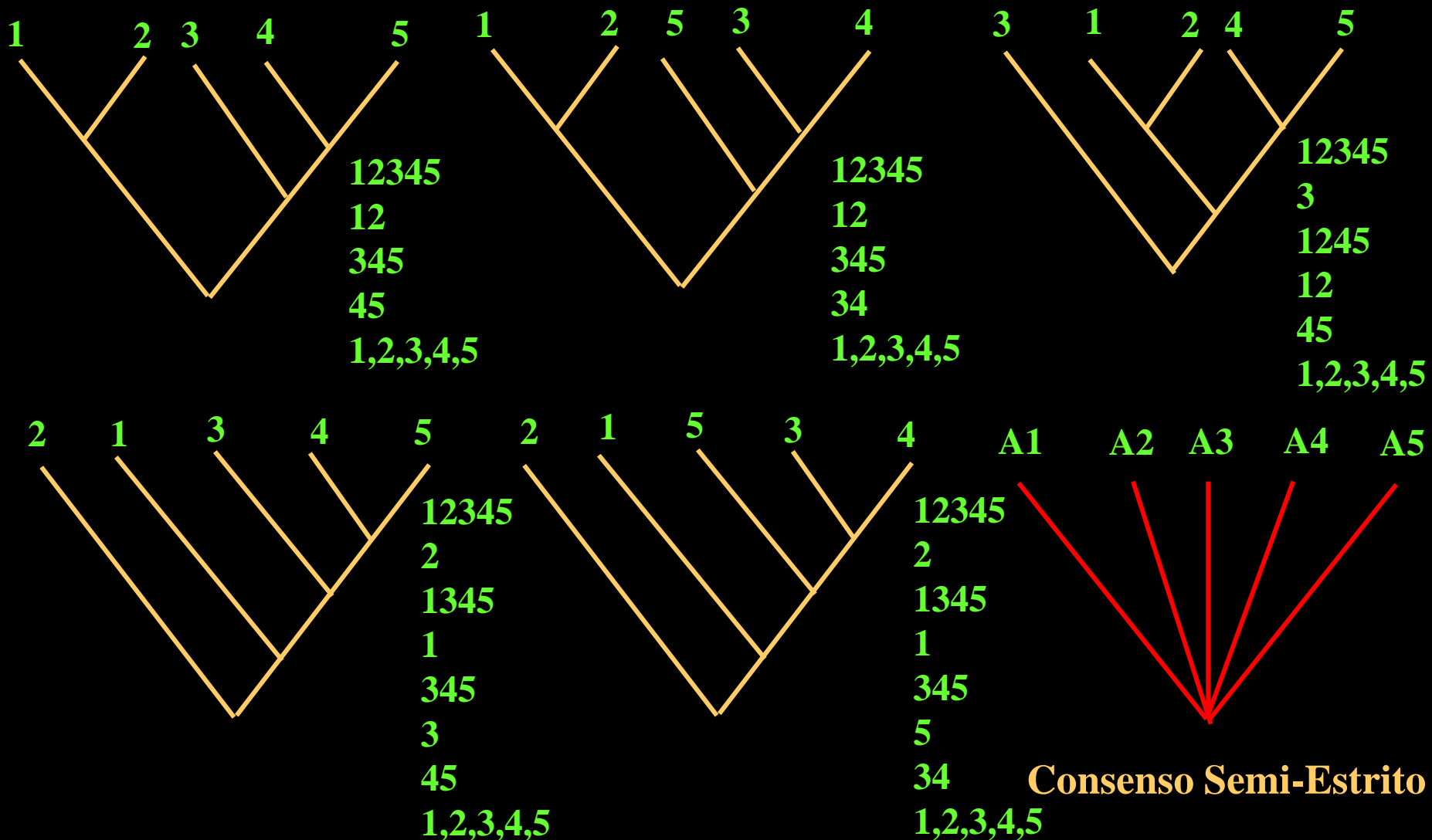
Consenso Estrito



Exercício 10: ANÁLISE DE PARCIMÔNIA DE BROOKS - BPA

5. Consenso

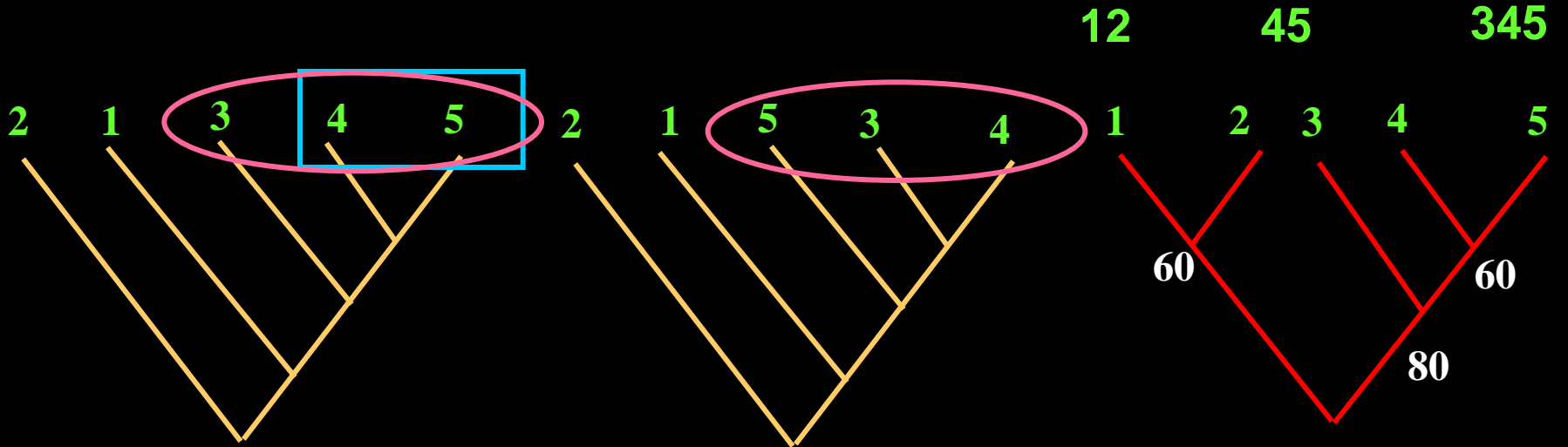
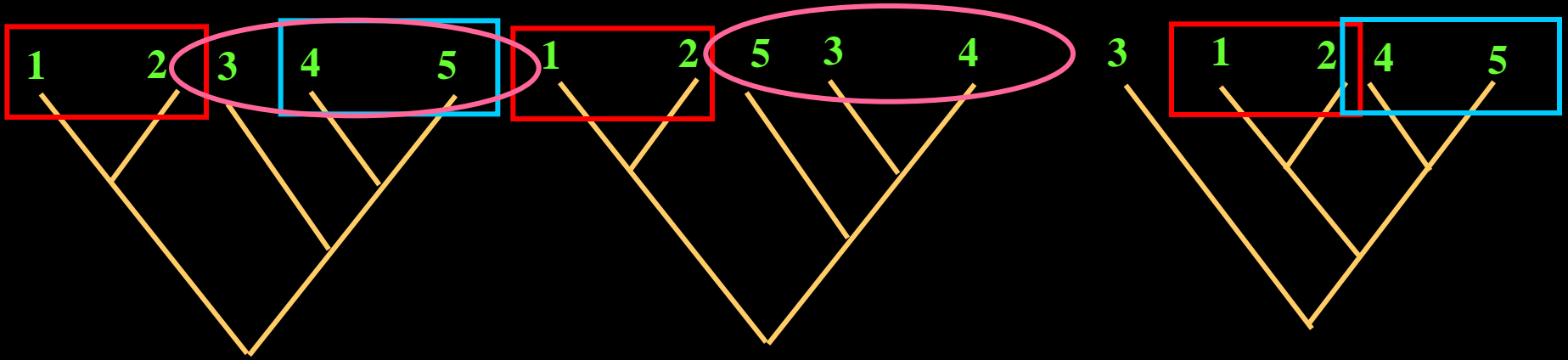
Consenso Semi-Estrito



Exercício 10: ANÁLISE DE PARCIMÔNIA DE BROOKS - BPA

5. Consenso

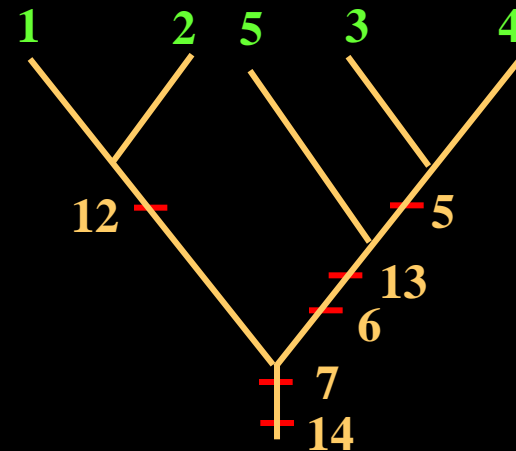
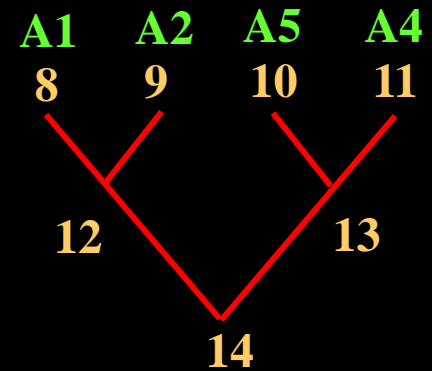
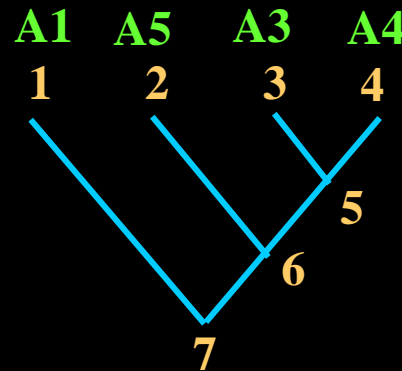
Consenso de Maioria



Exercício 10.3: ANÁLISE DE PARCIMÔNIA DE BROOKS - BPA

6. Refazer a matriz de representação com base na informação fornecida pelos cladogramas de área: presença (1), ausência (0) e (?) quando a área estiver ausente no cladograma.

	5	6	7	1	1	1
				2	3	4
A1	0	0	1	1	0	1
A2	?	?	?	1	0	1
A3	1	1	1	?	?	?
A4	1	1	1	0	1	1
A5	0	1	1	0	1	1
X	0	0	0	0	0	0

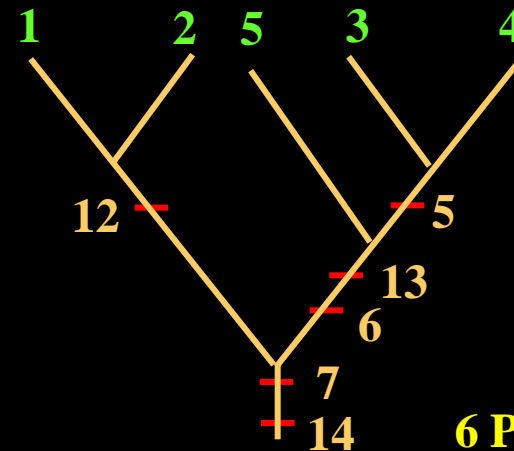
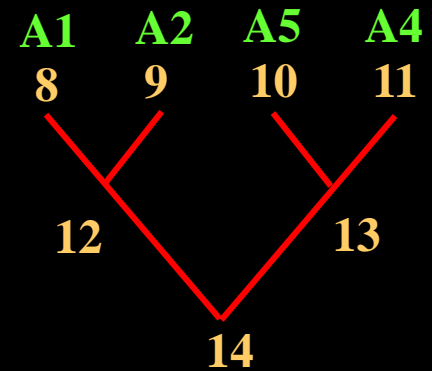
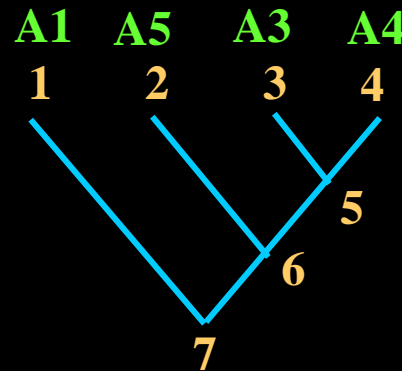


7. Análise cladística com base na matriz de representação, realizada por programa de computador.

Exercício 10.3: ANÁLISE DE PARCIMÔNIA DE BROOKS - BPA

6. Refazer a matriz de representação com base na informação fornecida pelos cladogramas de área: presença (1), ausência (0) e (?) quando a área estiver ausente no cladograma.

	5	6	7	1	1	1
				2	3	4
A1	0	0	1	1	0	1
A2	0	0	1	1	0	1
A3	1	1	1	0	1	1
A4	1	1	1	0	1	1
A5	0	1	1	0	1	1
X	0	0	0	0	0	0

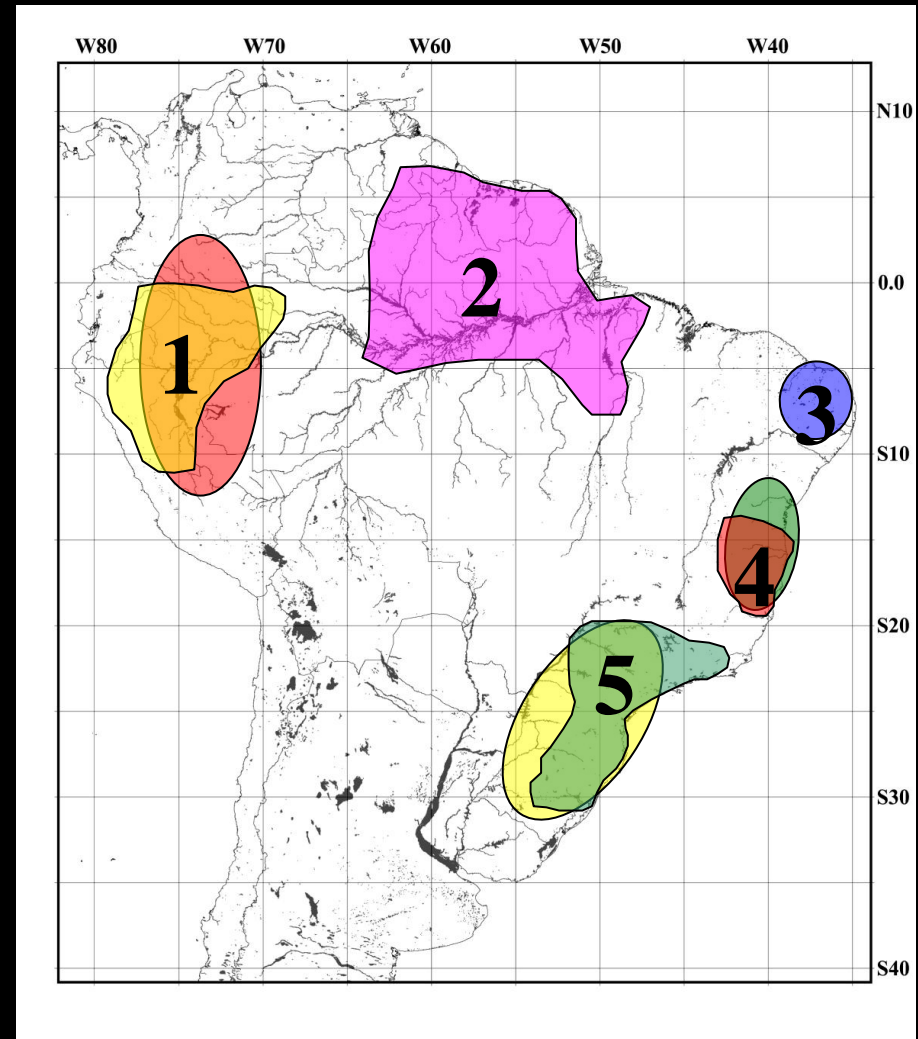
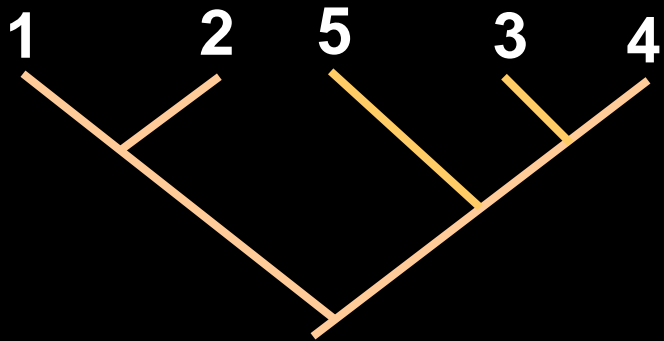


6 PASSOS

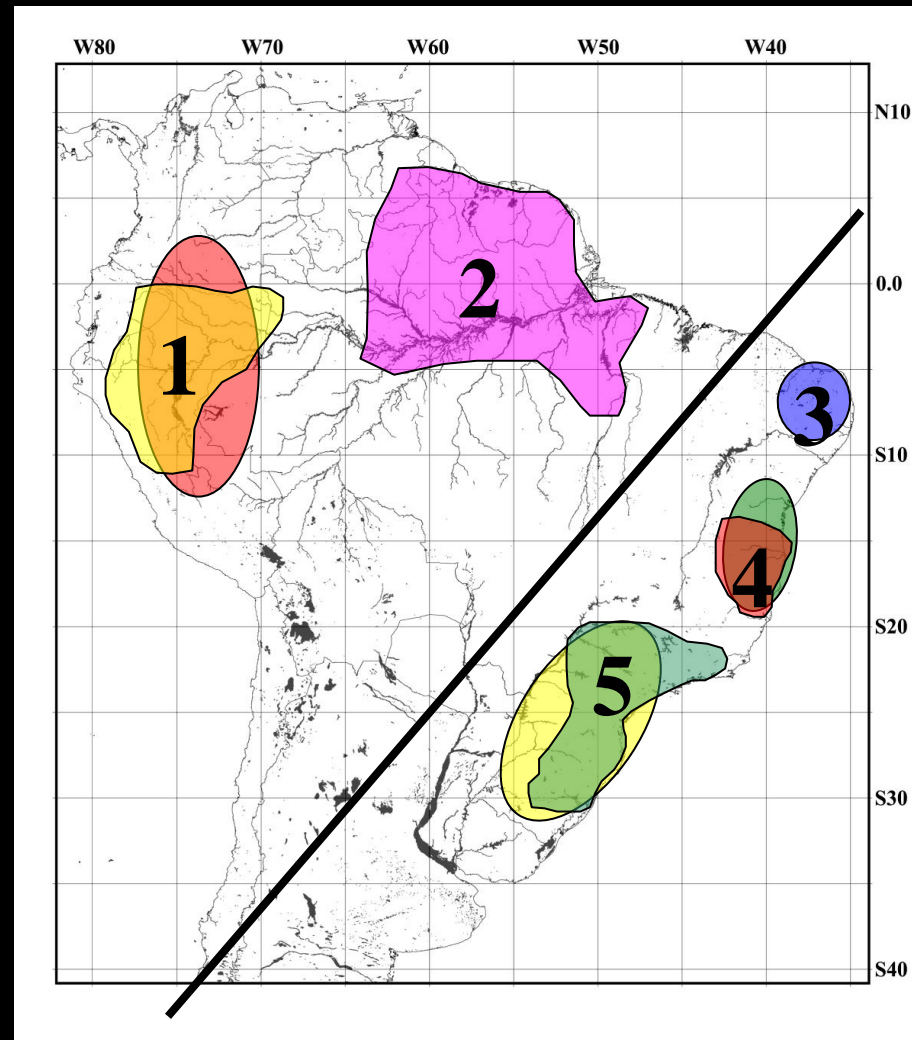
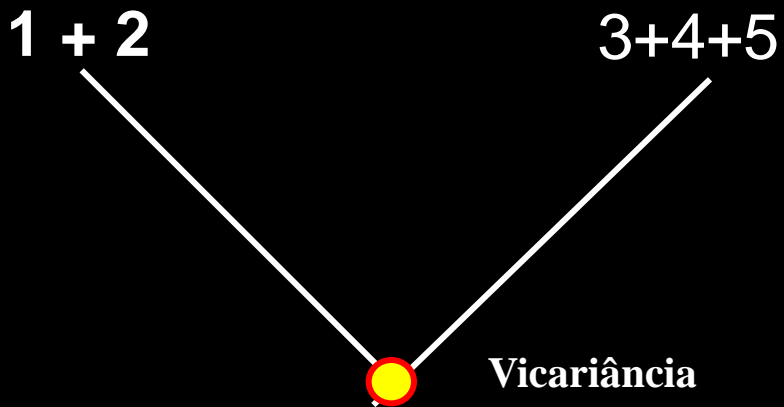
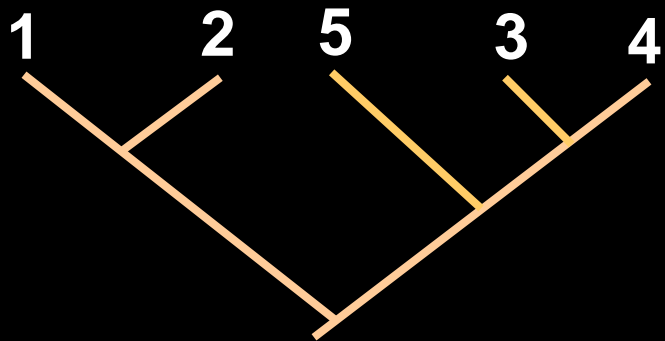
7. Análise cladística com base na matriz de representação, realizada por programa de computador. Algoritmo trata os dados ausentes (?) como (0) ou (1), dependendo da solução mais parcimoniosa.

Exercício 10

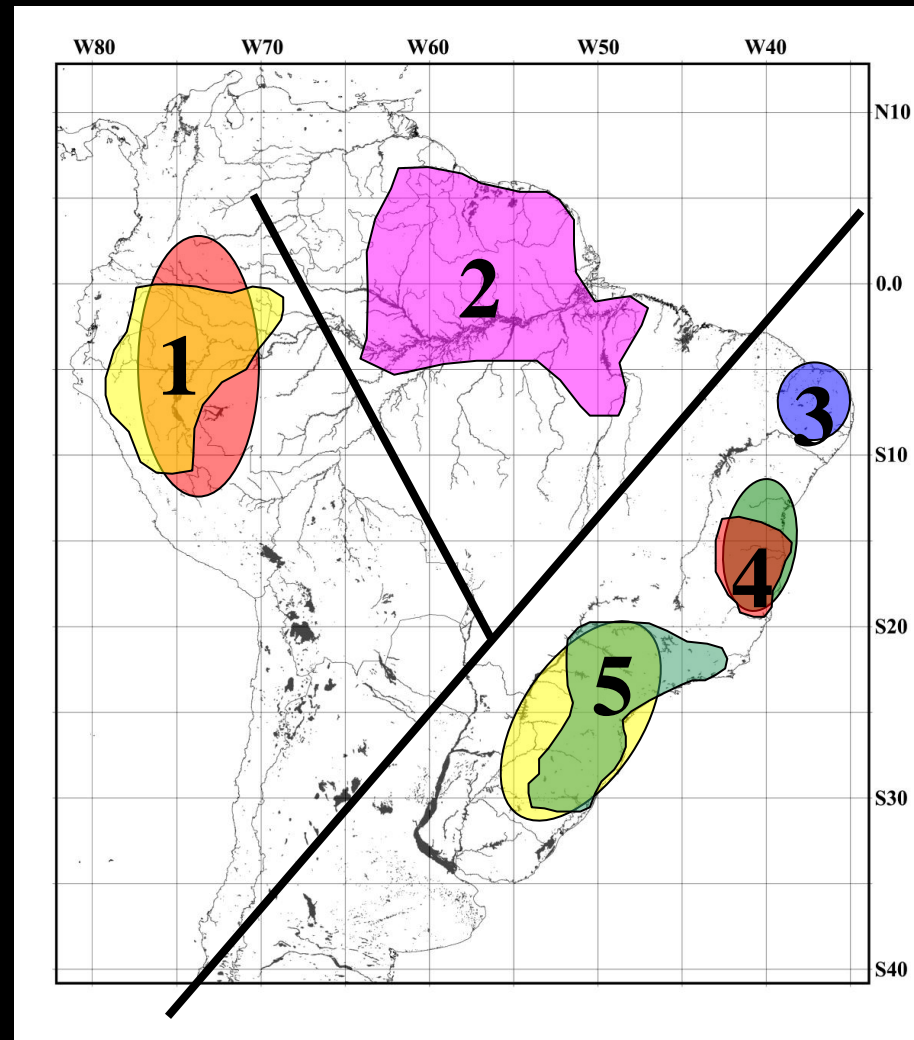
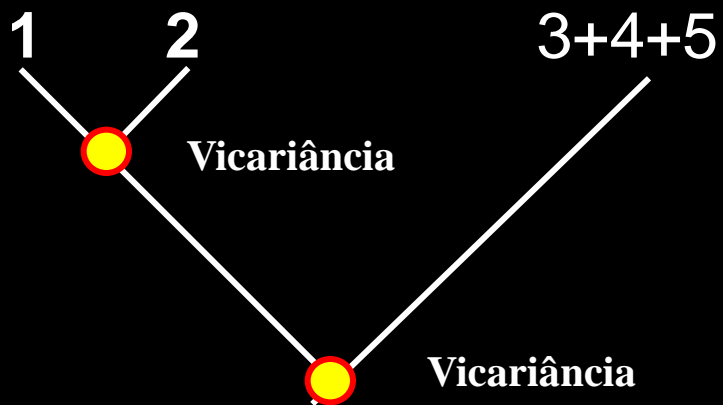
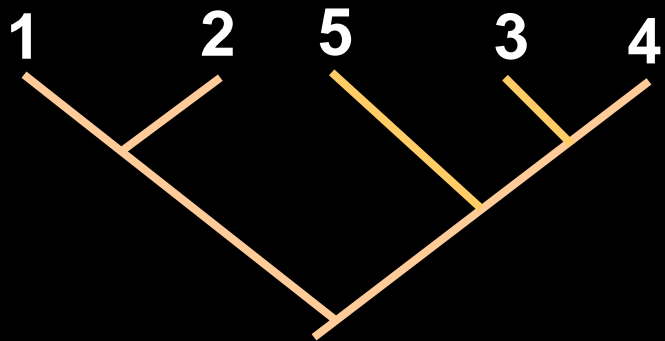
Cladograma Geral de Área



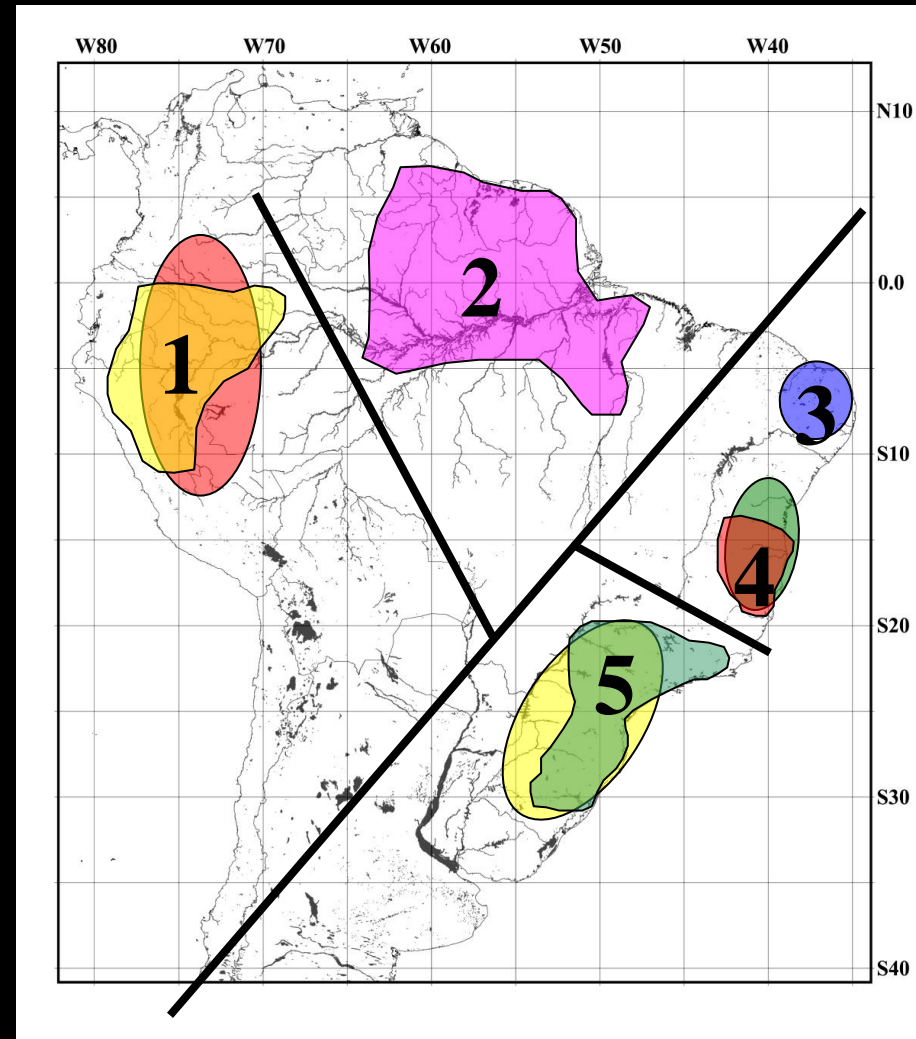
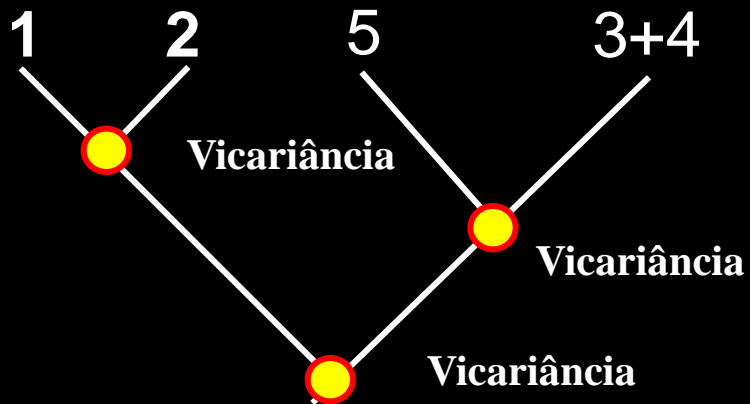
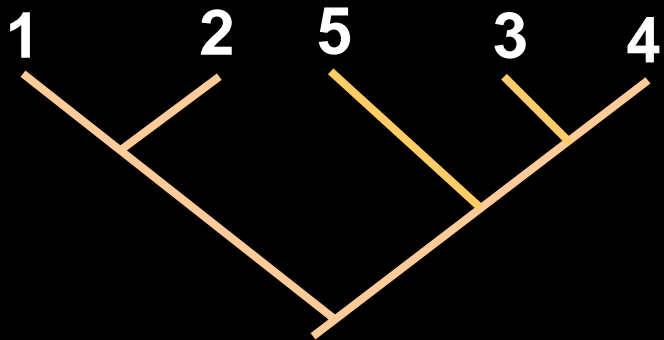
Exercício 10



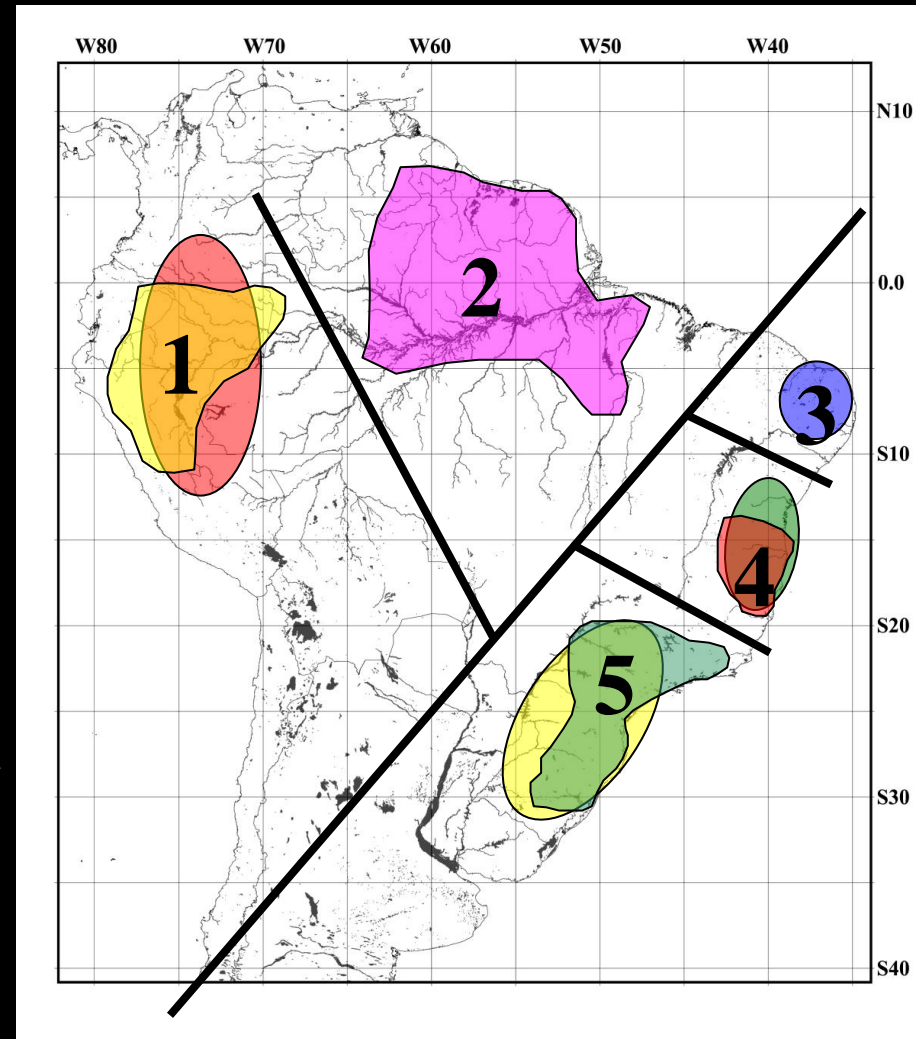
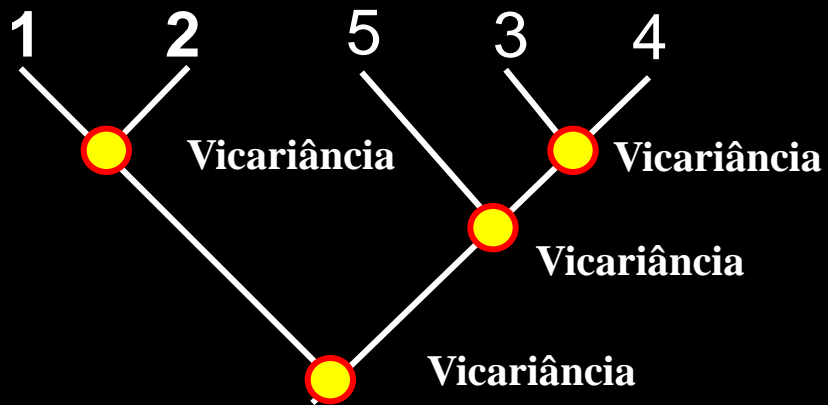
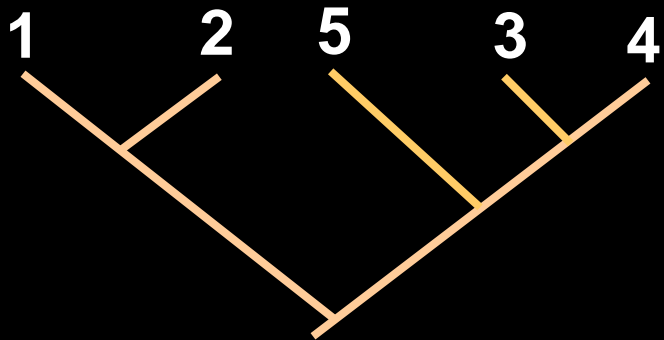
Exercício 10



Exercício 10



Exercício 10

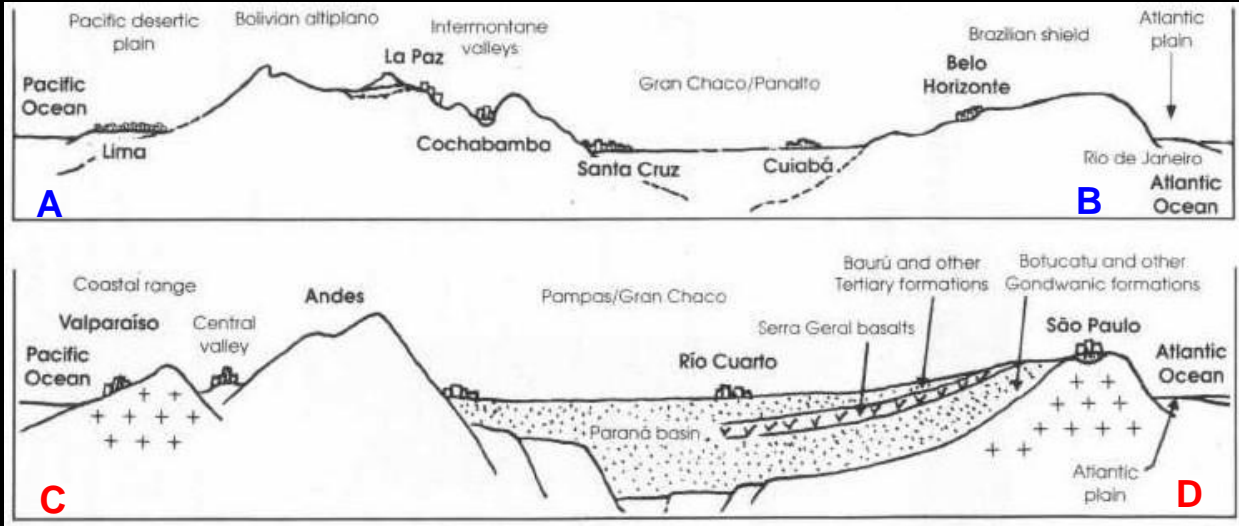
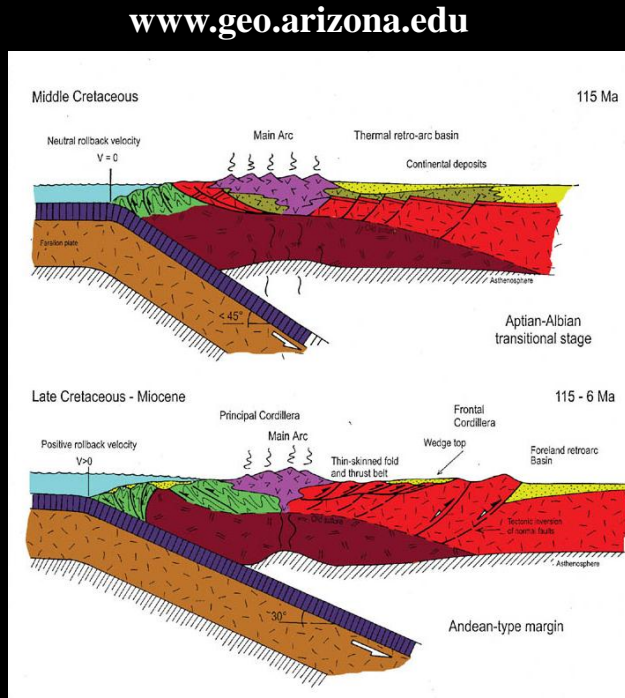


Exercício 10

Datação de evento vicariante

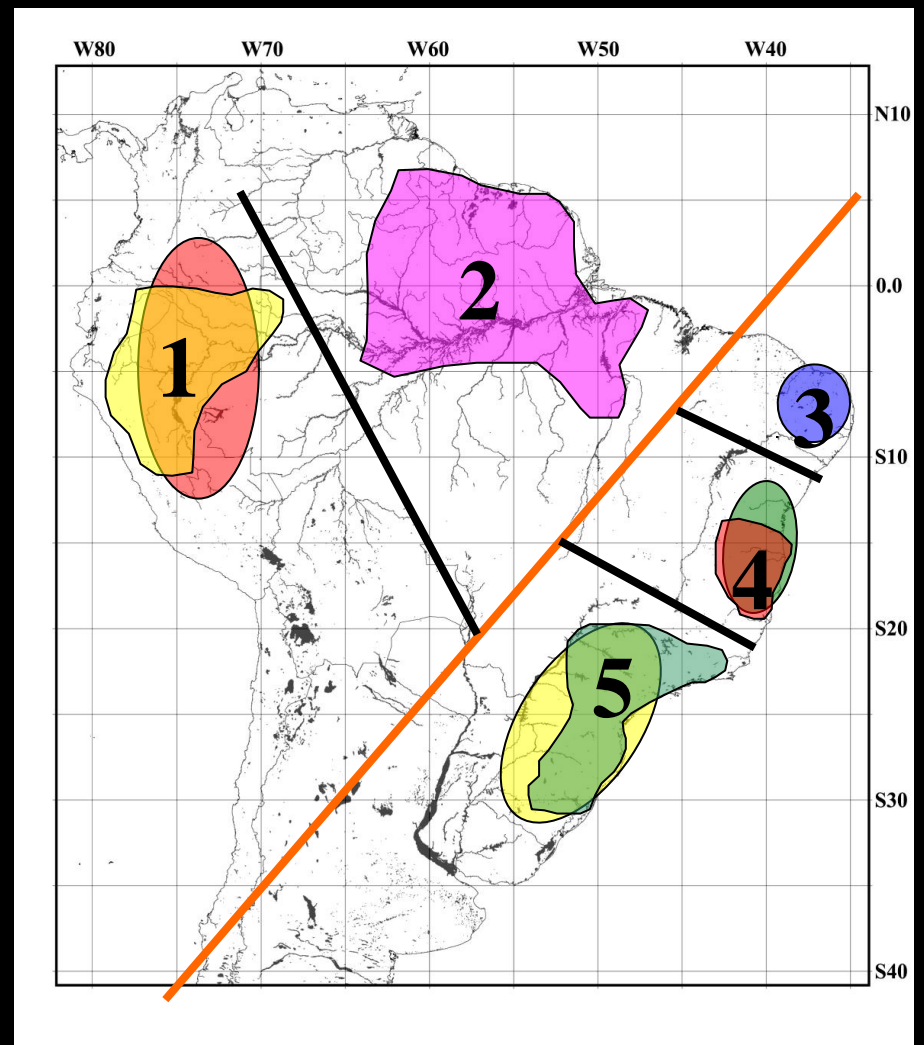
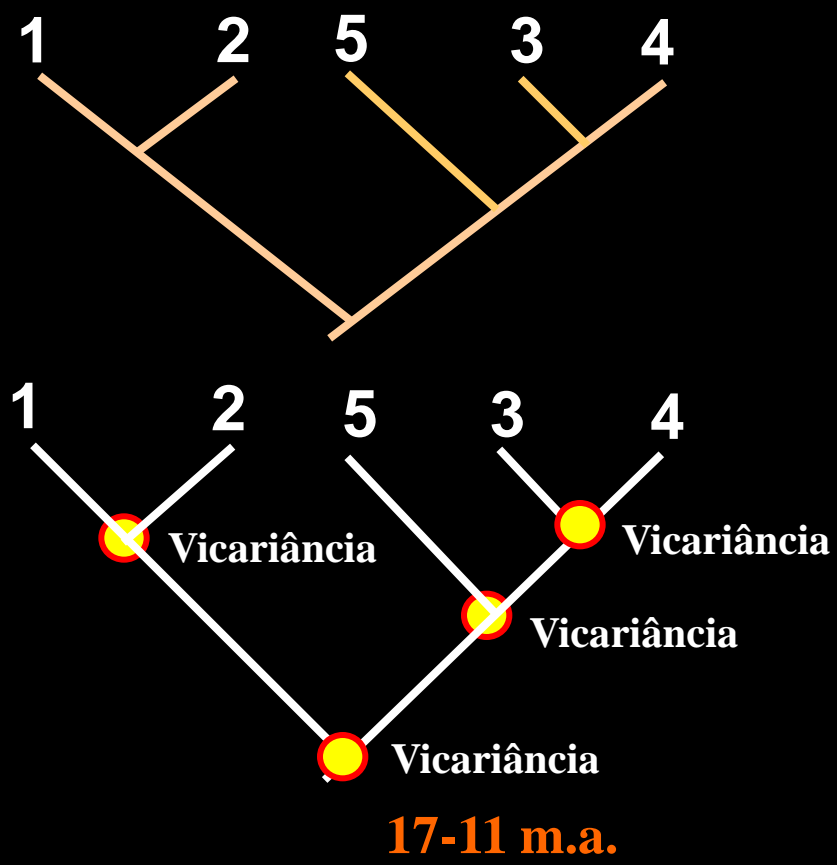
No Mioceno Médio (17-11 m.a.), o soerguimento dos Andes passou a modificar o clima do continente, acarretando a formação de uma faixa seca, a Diagonal Aberta, onde se situam o Chaco (Argentina, Paraguai e Bolívia), os Cerrados do Brasil Central e a Caatinga.

Antes, o clima era mais úmido e as florestas eram contínuas em boa parte da América do Sul. A faixa seca fragmentou a floresta ao norte e ao sul

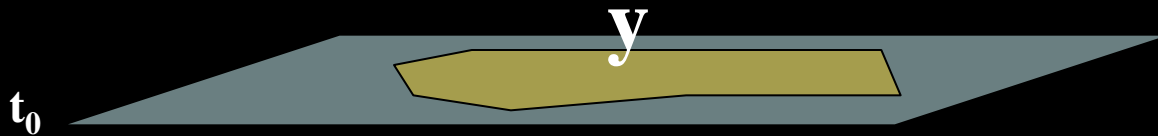


Exercício 10

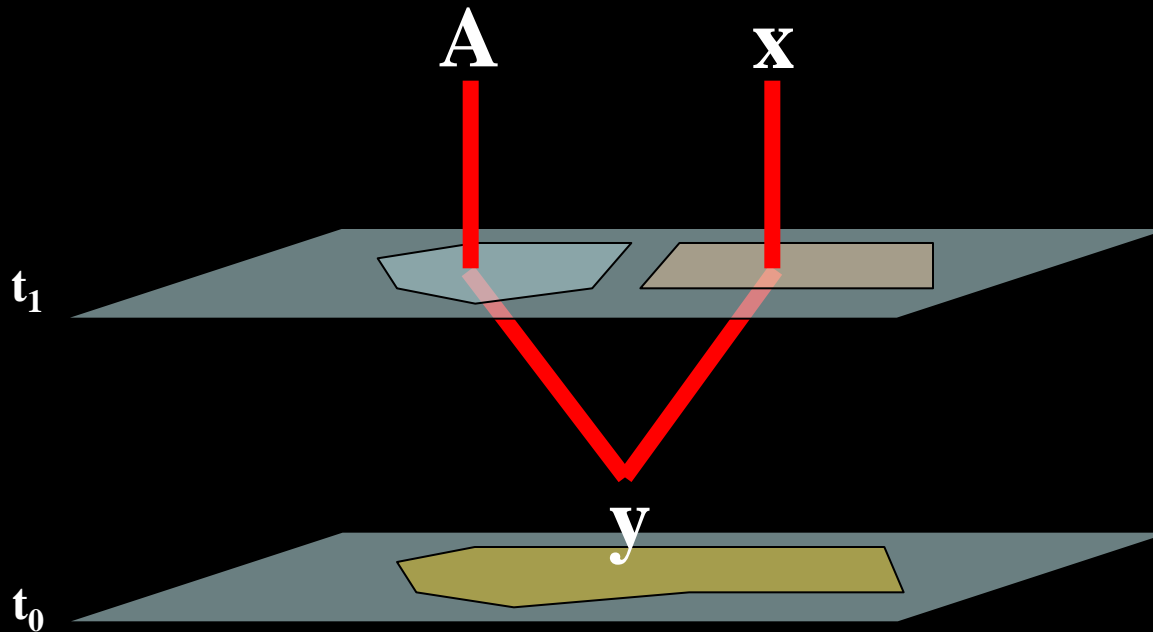
Datação de evento vicariante



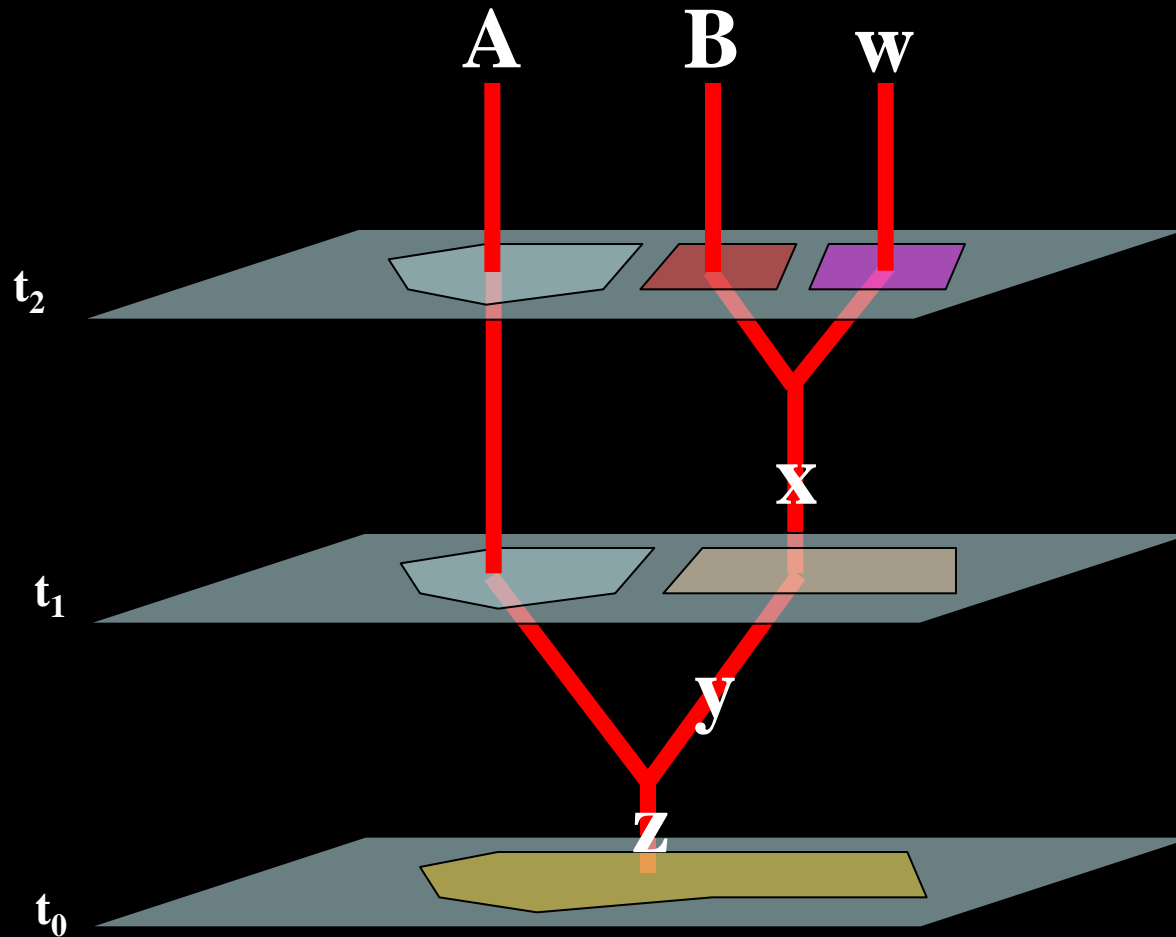
Espaço, tempo e forma: áreas e organismos



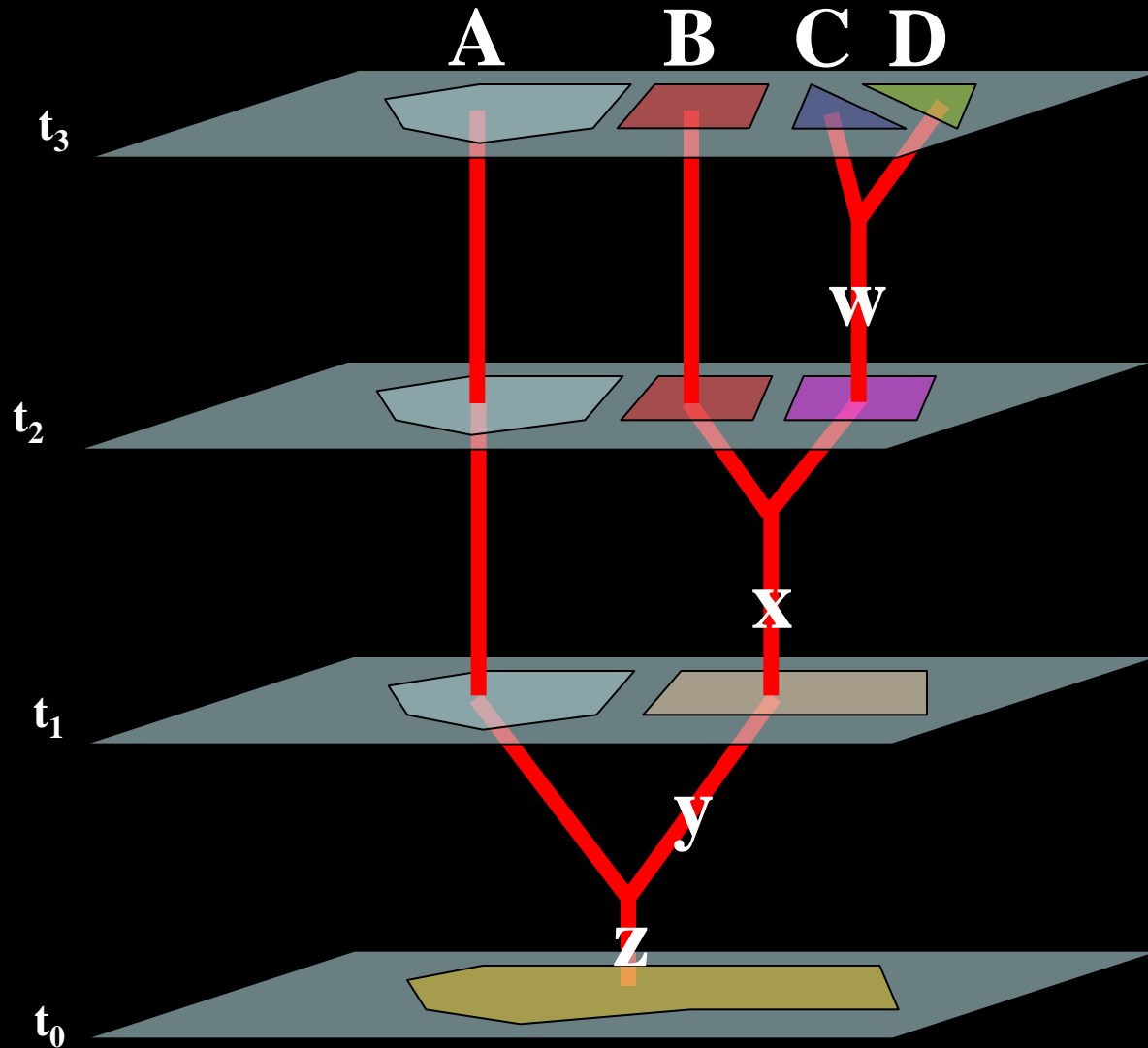
Espaço, tempo e forma: áreas e organismos



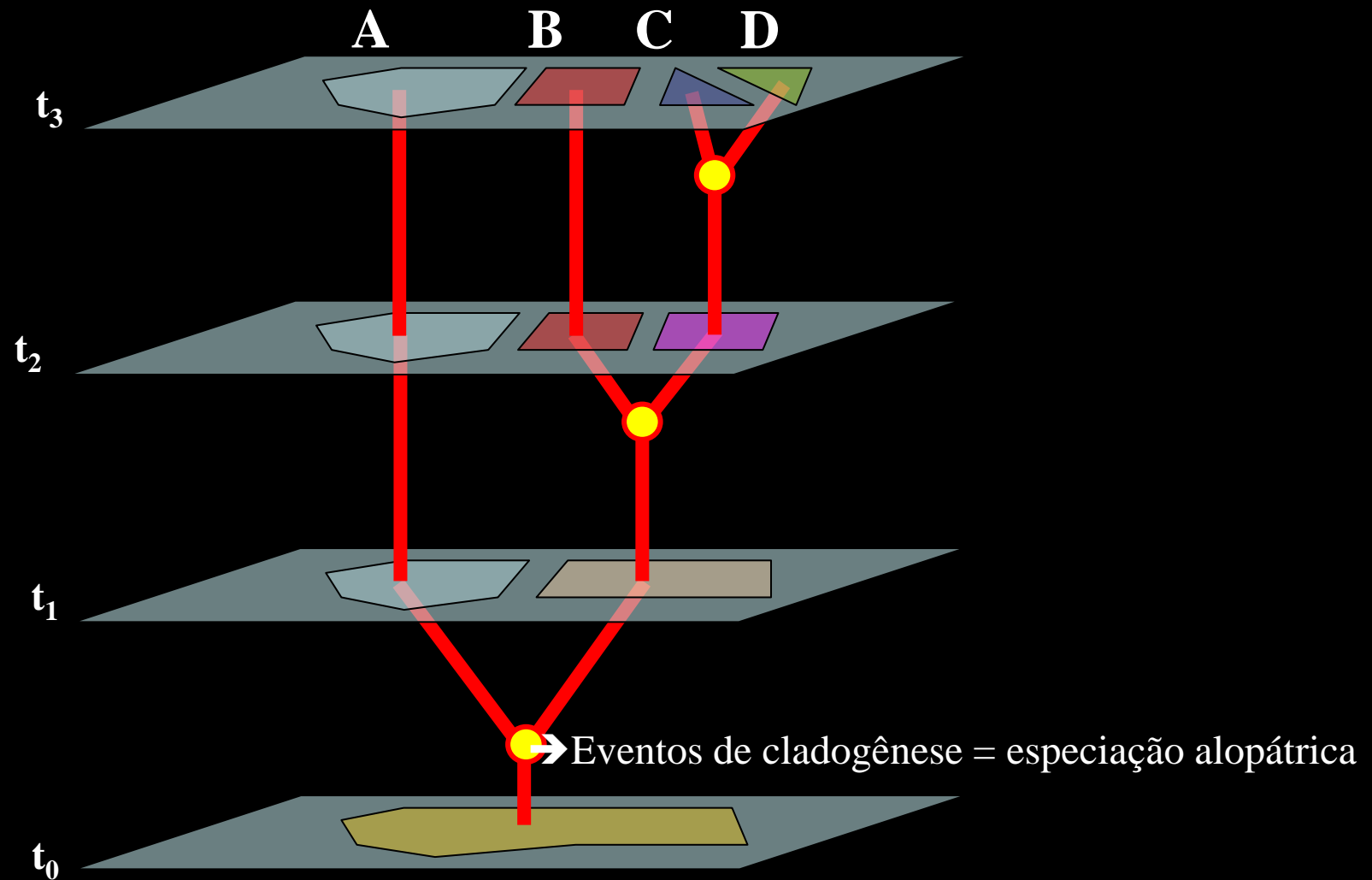
Espaço, tempo e forma: áreas e organismos



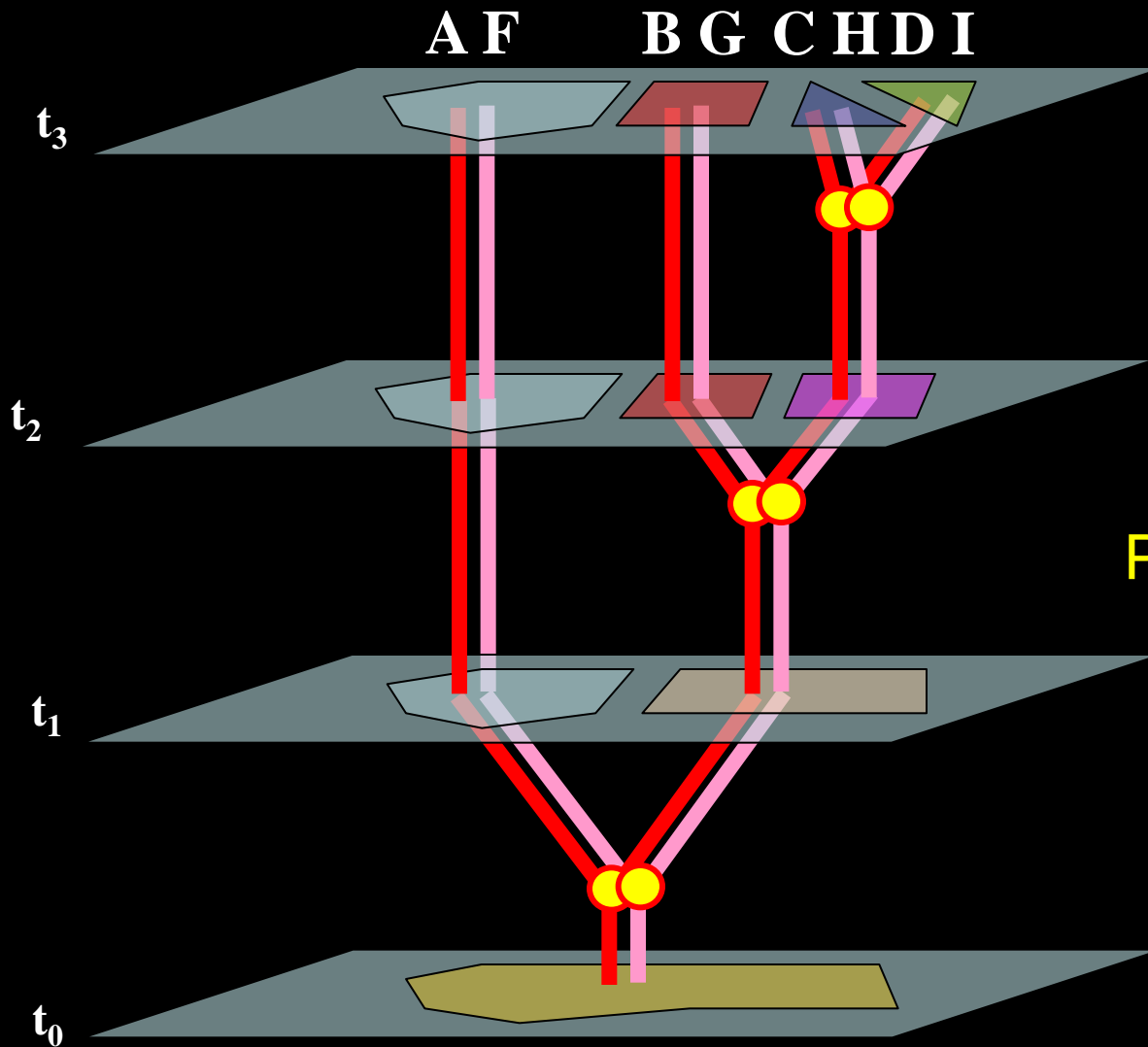
Espaço, tempo e forma: áreas e organismos



Espaço, tempo e forma: áreas e organismos



Espaço, tempo e forma: áreas e organismos



VICARIÂNCIA
Replicação de
Padrões filogenéticos